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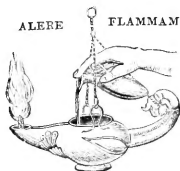
CATALOGUE
OF THE
BATRACHIA SALIENTIA
S. ECAUDATA
IN THE
COLLECTION
OF THE
BRITISH MUSEUM.



SECOND EDITION.
BY
GEORGE ALBERT BOULENGER.

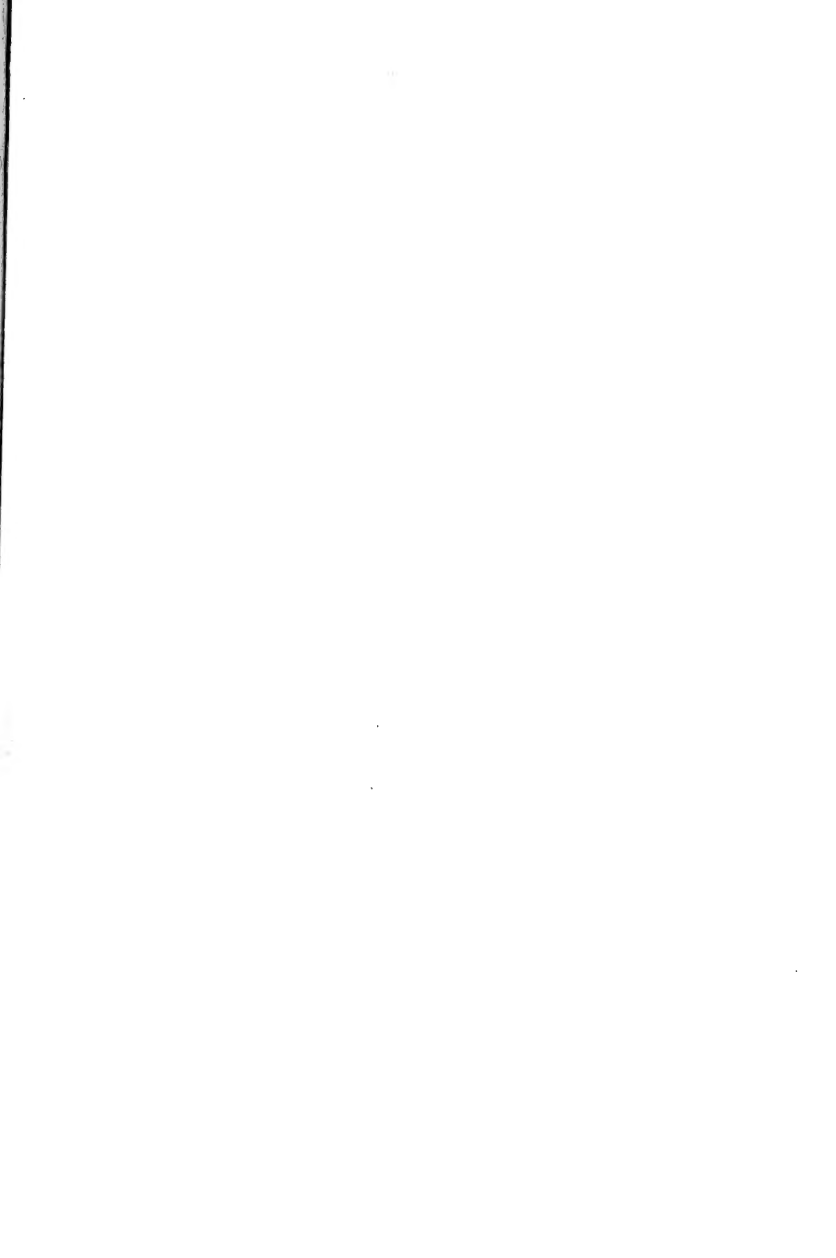
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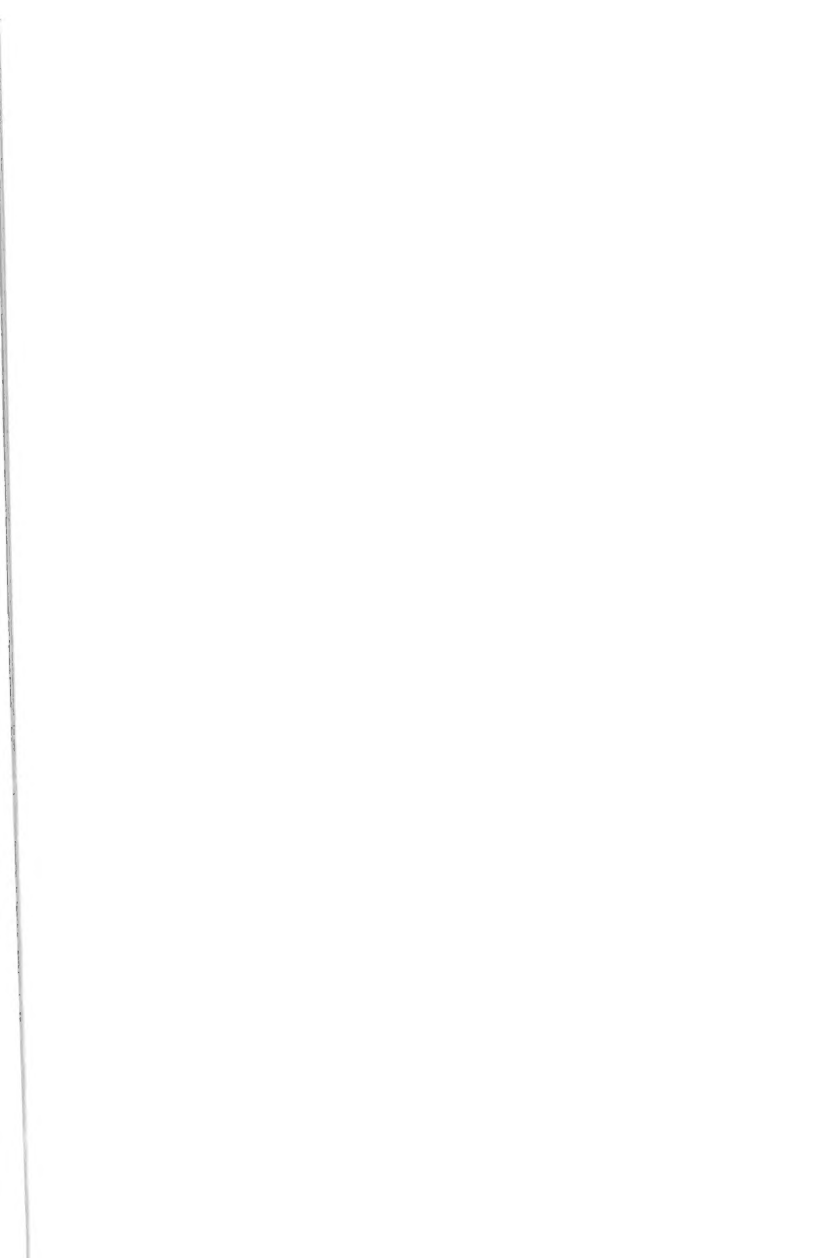
ALERE FLAMMAM.



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PREFACE.

IN the First Edition the object of this 'Catalogue' was stated to be to give a description of the species of Tailless Batrachians in the British Museum, with an indication of the history and origin of all the specimens in that collection, and also an account of the species which were known to exist in other museums but were desiderata in the National collection. This plan has been completely carried out in the present edition; it contains descriptions of, or references to, all the species introduced into the literature, whilst in the former edition no mention was made of species known from imperfect descriptions only.

The rearrangement of this part of the zoological collections, with a new Catalogue, had become very urgent for some time. By the First Edition a fresh impulse to the study of Batrachians was evidently given, many collectors turning their attention to them and discovering a great number of new forms, so that the collection in the British Museum alone has been nearly tripled within the last twenty years. That work fulfilled its purpose, but it has also ceased to be a satisfactory guide in the examination and determination of these animals. Besides, the discovery of almost every new generic type showed that the system proposed in the first edition (complete as it was in itself) was artificial, and that the employment of certain osteological characters, which had been worked out by Cope, Mirart, and Parker, promised a much more natural

arrangement. Probably the next step in perfecting this system will be marked by a consideration of the larval stages, the knowledge of which, at present, is so very fragmentary.

On comparing the two editions a great improvement will be found in the series of specimens, which, for many years, have been selected with the view of illustrating the geographical range of the species. Specimens with uncertain localities or without known origin, if no other special interest was attached to them, and especially duplicates, have been eliminated from the collection.

Thus the present work, although it appears in the list of publications of the British Museum as a "second edition," is almost entirely original. It has been prepared by M. Boulenger, Aide-Naturalist in the Royal Belgian Museum; and I feel confident that zoologists will thankfully acknowledge the industry and ability with which the author has performed the difficult task entrusted to him by the Trustees.

ALBERT GÜNTHER,

Keeper of the Department of Zoology.

British Museum,

February 1, 1882.



INTRODUCTION.

THE latest general work on Frogs—'Catalogue of the Batrachia Salientia in the British Museum,' published in 1858—contains the descriptions of 283 species. The present volume contains the descriptions of 800 species, more than two thirds of which have been seen by the author.

In 1858 the Collection of Tailless Batrachians in the British Museum contained 214 species, represented by 1691 specimens. Ten years later the number of species had increased to 313*. The two numbers amount now to 522 and 4692 respectively.

The classification adopted here is derived from that proposed by Mr. E. D. Cope; but it has been modified in many respects. It appears to the author undeniable that the principles of classification laid down by Mr. Cope are more in accordance with the natural affinities of the genera of Tailless Batrachians than those employed by other authors; this is amply proved by all we know of their geographical distribution, development, and physiology.

An objection has been made to the adoption of this system, but on a rather trivial ground. It is the supposed difficulty of ascertaining osteological characters; and quite recently Dr. P. Brocchi † questions whether it is possible to apply in descriptive zoology a classification that requires the sacrifice of one or several of the specimens. But,

* Cf. Günther, P. Z. S. 1868, p. 478.

† Mission Scientif. au Mexique, Batraciens.

in reality, such a sacrifice need not be made, as very little skill is required to obtain the necessary information without serious injury to the specimen. Herpetologists have long been in the habit of making an incision in the skin of the pelvic region for the purpose of ascertaining whether the diapophyses of the sacral vertebra are dilated or not; a slit made in the same manner along the thorax will show the sternal characters, and another (which can be sewn up again) along the side of the body will suffice for the examination of the structure of the vertebral column.

Few authors agree as to the terminology of the elements of the sternal apparatus. That given by Prof. W. K. Parker in his work on the Shoulder-girdle and Sternum has been followed throughout in this Catalogue.

The coloration is described from spirit-specimens, should even the life-coloration be known. When the size is stated, it is always that of the largest specimen in the British Museum.

The affixes to the names of donors &c., in the third column of the list of specimens, may be explained as follows:—" [P.]" signifies "Presented by;" "[C.]" = "Collected by;" "[E.]" = "Obtained by exchange." Where none of these signs are employed, the specimens were purchased.

G. A. BOULENGER.

British Museum,
Jan. 30, 1882.



SYSTEMATIC INDEX.

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CATALOGUE

OF

BATRACHIA ECAUDATA.

BATRACHIA.

Order I. ECAUDATA.

In the perfect state, four limbs and no tail.

Suborder I. PHANEROGLOSSA.

Eustachian tubes separated; a tongue.

Series A. FIRMISTERNIA.

Coracoids firmly united by a simple epicoracoid cartilage; pre-coracoids, if present, resting with their distal extremity upon the coracoids, or connected with the latter by the epicoracoid cartilage.

- Fam. 1. **Ranidæ**. Upper jaw toothed; diapophyses of sacral vertebra cylindrical, or very slightly dilated p. 3.
- Fam. 2. **Dendrobatidæ**. Maxillary teeth none; diapophyses of sacral vertebra not dilated p. 140.
- Fam. 3. **Engystomatidæ**. Maxillary teeth none; diapophyses of sacral vertebra dilated p. 146.
- Fam. 4. **Dyscophidæ**. Upper jaw toothed; diapophyses of sacral vertebra dilated p. 179.

Series B. ARCIFERA.

Coracoids and precoracoids connected by an arched cartilage (the epicoracoid), that of the one side overlapping that of the other.

- Fam. 5. **Cystignathidæ**. Upper jaw toothed; diapophyses of sacral vertebra cylindrical, or slightly dilated p. 183.

- Fam. 6. **Dendrophryniscidæ**. Maxillary teeth none; diapophyses of sacral vertebra not dilated p. 273.
- Fam. 7. **Buфонidæ**. Maxillary teeth none; diapophyses of sacral vertebra dilated p. 274.
- Fam. 8. **Hylidæ**. Upper jaw toothed; diapophyses of sacral vertebra dilated; terminal phalanges claw-shaped. . . p. 330.
- Fam. 9. **Pelobatidæ**. Upper jaw toothed; diapophyses of sacral vertebra strongly dilated; ribs none p. 432.
- Fam. 10. **Discoglossidæ**. Upper jaw toothed; diapophyses of sacral vertebra dilated; short ribs articulated to the anterior diapophyses p. 444.
- Fam. 11. **Amphignathodontidæ**. Both jaws toothed; diapophyses of sacral vertebra dilated p. 449.
- Fam. 12. **Hemiphractidæ**. Both jaws toothed; diapophyses of sacral vertebra not dilated p. 451.

Suborder II. AGLOSSA.

Eustachian tubes united into a single ostium pharyngium; no tongue.

- Fam. 13. **Dactylethridæ**. Upper jaw toothed p. 456.
- Fam. 14. **Pipidæ**. Teeth none p. 458.

Suborder I. PHANEROGLOSSA.

Phaneroglossa, part., *Wagler, Syst. Amph.*

Phaneroglosses, *Dum. & Bibr. Exp. Gén.* viii.

Opisthoglossa and Proteroglossa, *Günther, Cat. Batr. Sal.*

Eustachian tubes separated; a tongue.

All the Frogs of this division, as far known, possess in the advanced larval state one spiraculum only, or opercular slit; it is situated on the left side, except in the *Discoglossidæ*, in which it is situated in the middle of the thoracic region.

A. FIRMISTERNIA.

Buфонiformia, part., and Raniformia, *Cope, Nat. Hist. Rev.* 1865.

Raniformia and Gastrechmia, *Cope, Journ. Ac. Philad.* (2) vi. 1867.

Raniformia, Firmisternia, and Gastrechmia, *Cope, Check-list of N. Amer. Batr. & Rept., Bull. U.S. Nat. Mus.* i. 1877.

Coracoids firmly united by a simple epicoracoid cartilage; precoracoids, if present, resting with their distal extremity upon the coracoids, or connected with the latter by the epicoracoid cartilage.



Ceratobatrachidae.

<u>Ceratobatrachus guentheri</u> , Blgr.				
a.	Several sps. ♂ & ♀	Shottland I nd	Guppy.	} (Types.)
b, c.	"	Treasury I?	"	
d.	♂	Fars. I?	"	
e.	Several sps. ♂ & ♀ yg.	"	Woodford.	
f. l.	♂ & ♀ yg.	Guadalecanar.	"	
m.	Ygr.	Rubiana, New Georgia.	"	
n-o.	♀	Gela.	"	

1. RANIDÆ.

Ranidæ, part., Cystignathidæ, part., Polypedatidæ, Hylodidæ, part.,
Günth. Cat. Batr. Sal.

Ranidæ, *Cope, Nat. Hist. Rev.* 1865.

Colostethidæ and Ranidæ, *Cope, Journ. Ac. Philad.* (2) vi. 1867.

Polypedatidæ, part., and Ranidæ, part., *Mivart, Proc. Zool. Soc.*
1869.

Upper jaw toothed; diapophyses of sacral vertebra not, or but very slightly, dilated.

The members of this family show no great differences in the structure of the sternal apparatus. The precoracoids are always present, their axis being parallel with that of the coracoids, and their distal extremity resting upon that of the latter. The precoracoids are much weaker than the coracoids. In most genera an omosternum and a sternum are well developed and furnished with a bony style. In *Oxyglossus*, *Hylaxalus*, and *Prostherapis* the sternum lacks the bony style, and so does also the omosternum in *Nannophrys* and *Phyllodromus*. In *Colostethus*, according to Cope, the omosternum is totally absent.

The vertebrae are procoelian. The coccyx is attached to two condyles. There are no ribs.

A fronto-parietal fontanelle is constantly absent.

The distal phalanges may be simple, pointed, or subtriangular, T-shaped, Y-shaped, or even claw-shaped (*Hylambates*), the latter structure being met with in the *Hylidæ*, *Amphignathodontidæ*, and *Hemiphractidæ* only.

Synopsis of the Genera.

Pupil horizontal; tongue entire; toes webbed; outer metatarsal separated by web; sternum without bony style; omosternum with a bony style 1. *Oxyglossus*, p. 5.

Pupil horizontal; tongue more or less deeply emarginate; vomerine teeth; fingers perfectly free, toes webbed; outer metatarsals separated by web; omosternum and sternum with a bony style.
2. *Rana*, p. 6.

Characters of *Rana*, but the fingers more or less webbed.

3. *Rhacophorus*, p. 73.

Characters of *Rhacophorus*, but the two inner fingers opposite to the two outer 4. *Chiromantis*, p. 92.

Pupil horizontal; tongue deeply emarginate: vomerine teeth none; outer metatarsals separated by a groove or narrow web; omosternum and sternum with a bony style.

5. *Ixalus*, p. 93.

- Pupil horizontal; tongue deeply emarginate; vomerine teeth; fingers free, toes free or slightly webbed; outer metatarsals united or separated by a groove; omosternum and sternum with a bony style 6. **Cornufer**, p. 107.
- Pupil horizontal; tongue deeply emarginate; vomerine teeth none; toes webbed; outer metatarsals separated by web; omosternum and sternum with a bony style . . 7. **Phrynobatrachus**, p. 111.
- Pupil vertical; tongue deeply emarginate; vomerine teeth; toes webbed; outer metatarsals separated by web; omosternum and sternum with a bony style 8. **Nyctibatrachus**, p. 113.
- Pupil vertical; tongue rather deeply emarginate; vomerine teeth; toes free; outer metatarsals separated by a groove; omosternum and sternum slender, cartilaginous. 8*a*. **Nannobatrachus**, p. 470.
- Pupil horizontal; tongue deeply emarginate; vomerine teeth; toes free; outer metatarsals united; omosternum and sternum without bony style 9. **Nannophrys**, p. 114.
- Pupil horizontal; tongue heart-shaped; vomerine teeth none; fingers free, toes nearly free; outer metatarsals united; omosternum and sternum with a bony style. . . 10. **Arthroleptis**, p. 116.
- Pupil horizontal; tongue heart-shaped; vomerine teeth none; fingers and toes more or less webbed; outer metatarsals united; omosternum and sternum with a bony style.
11. **Rappia**, p. 119.
- Characters of *Rappia*, but the pupil vertical.
12. **Megalixalus**, p. 128.
- Pupil vertical; tongue heart-shaped; vomerine teeth; fingers free, toes free or nearly so, the tips not dilated; outer metatarsals united; omosternum and sternum with a bony style.
13. **Cassina**, p. 131.
- Pupil vertical; tongue deeply emarginate; vomerine teeth; tips of fingers and toes dilated, the terminal phalanges claw-shaped; outer metatarsals united; omosternum and sternum with a bony style. 14. **Hylambates**, p. 132.
- Pupil horizontal; tongue heart-shaped; vomerine teeth none; toes webbed; outer metatarsals united; omosternum with a bony style; sternum cartilaginous . . . 15. **Hylixelus**, p. 137.
- Characters of *Hylixelus*, but the tongue elliptic, entire, and the toes nearly free 16. **Prostherapis**, p. 138.
- Characters of *Prostherapis*, but the omosternum without bony style. 17. **Phyllodromus**, p. 139.
- Characters of the two latter genera, but no omosternum.
18. **Colostethus**, p. 140.



r-o. ♀

Moulmein.

Theobald.

1. OXYGLOSSUS.

Oxyglossus, *Tschudi, Batr.* p. 85; *Dum. & Bibr.* viii. p. 332; *Günth. Cat.* p. 6; *Cope, Nat. Hist. Rev.* 1865, p. 117.

Phrynoglossus, *Peters, Mon. Berl. Ac.* 1867, p. 29.

Microdiscopus, *Peters, eod. loc.* 1877, p. 422.

Pupil horizontal. Tongue narrow, entire, and free behind. Vomerine teeth none. Tympanum indistinct. Fingers free; toes webbed, the tips not dilated into regular disks. Outer metatarsals separated by web. (Mosternum with a bony style; sternum a cartilaginous plate. Terminal phalanges simple.

East Indies.

Synopsis of the Species.

- Tongue pointed behind 1. *lima*, p. 5.
 Tongue rounded behind; skin nearly smooth;
 a single metatarsal tubercle 2. *levis*, p. 6.
 Tongue rounded behind; skin warty above;
 two metatarsal tubercles 3. *martensii*, p. 6.

1. *Oxyglossus lima*.

Oxyglossus lima, *Günth. Cat.* p. 6.

Oxyglossus lima, *Tschudi, Batr.* p. 85; *Dum. & Bibr.* p. 334, pl. 86.
 f. 4; *Günth. Rept. Brit. Ind.* p. 401; *Stoliczka, Proc. As. Soc.*
 1870, p. 272, and 1872, p. 101.

Tongue elongate, extensively free and pointed behind. Habit stout. Head small; snout rather pointed; interorbital space narrower than the upper eyelid. Fingers rather slender, pointed, first not extending beyond second: toes pointed, fourth not very much longer than third and fifth, broadly webbed; subarticular tubercles very small; two conical metatarsal tubercles; a small tarsal tubercle just below the tibio-tarsal articulation. The hind limb being carried forwards along the body, the tarso-metatarsal articulation reaches the tip of the snout. Above with numerous small warts, beneath with symmetrical rows of pores. Brownish above, with darker markings: sometimes a light vertebral stripe: whitish below, with a dark brown band beneath the arm and along the hinder side of the thigh, and a brown L-shaped mark on each side of the lower belly. Male with an internal subgular vocal sac.

Java; E. India; S. China.

a-c. ♂ ♀.	Java.	Leyden Museum.
d. ♀.	Java.	Dr. Bleeker.
e. Several spec.: ♂, ♀, & hgr.	Siam.	M. Mouhot [C.].
f-g. Hgr.	Gamboja.	M. Mouhot [C.].
h. ♀.	Pegu.	
i. ♀.	Birmah.	T. C. Jerdon, Esq. [P.].
k. ♀.	China.	J. R. Reeves, Esq. [P.].
l. ♀.	China?	— Adams, Esq. [C.].

2. *Oxyglossus lævis*.

Oxyglossus lævis, *Günth. Cat.* p. 7, pl. i. f. A.

Phrynoglossus lævis, *Peters, Mon. Berl. Ac.* 1867, p. 29.

Oxyglossus lævis, *Stoliczka, Proc. As. Soc.* 1870, p. 273, and 1872 p. 101.

Microdiscopus sumatranus, *Peters, Mon. Berl. Ac.* 1877, pp. 422, 682.

Tongue oval, rounded behind, free in its posterior third. Habit stout. Head small; snout rounded; interorbital space nearly as broad as the upper eyelid. Fingers short, with blunt tips, first not extending beyond second; toes broadly webbed, fourth not very much longer than third and fifth, the tips dilated into very small disks; subarticular tubercles of fingers moderate, of toes small; a single, compressed, inner metatarsal tubercle. The hind limb being carried forwards along the body, the tarso-metatarsal articulation reaches the tip of the snout, or somewhat beyond. Skin nearly smooth. Brown above, with or without rather indistinct darker spots; sometimes a light vertebral line; beneath whitish, speckled with brown on the throat and under the limbs. Male with an internal subgular vocal sac.

Philippines; Sumatra; E. India.

a-d. ♂, ♀, & hgr.

e, f. ♀.

g. Hgr.

h-i. Hgr.

k. Hgr.

Laguna del Bay.

Philippines.

Pegu.

Birmah.

Birmah.

Dr. Meyer [C.].

(Types of *O. lævis*.)

W. Theobald, Esq. [P.].

W. Theobald, Esq. [P.].

T. C. Jerdon, Esq. [P.].

3. *Oxyglossus martensii*.

Phrynoglossus martensii, *Peters, Mon. Berl. Ac.* 1867, p. 29.

Allied to *O. lævis*, but the web between the toes deeply emarginate, a rather indistinct outer metatarsal tubercle, and warts on the back and limbs. A dark band between the eyes; grey beneath, the throat with white punctulations.

Bangkok, Siam.

2. RANA*.

Rana, sp., *Linn. S. N.* i. p. 354.

Rana, *Wagler, Syst. Amph.* p. 203; *Tschudi, Batr.* p. 78; *Dum. & Bibr. Erp. Gén.* viii. p. 335; *Günth. Cat. Batr. Sal.* p. 8; *Cope, Nat. Hist. Rev.* 1865, p. 117.

Hylarana, *Tschudi, l. c.* p. 78; *Günth. l. c.* p. 71; *Cope, l. c.*

* Uncertain species:—

1. *Rana aurora*, Baird & Gir. *Proc. Ac. Philad.* 1862, p. 174, and *U.S. Explor. Exped., Herp.* p. 18, pl. 11. f. 1-6.—Puget Sound.

2. *Rana draytonii*, Baird & Gir. *l. c.* p. 174, and *l. c.* p. 23, pl. 11. f. 19-24.—California.

3. *Hylarana mindanensis*, Girard, *U.S. Explor. Exped., Herp.* p. 52.—Caldera.

l. A.	Lisut, Perak.	Uray.
m. w. ♀	Moulmein.	Incobaid.
o. ♀	Changkatjerin, Perak.	Uray.
p. r. ♂ ♀	Balabac.	Everett.
s. Hgs.	Celebes.	Sarasin.



- Polypedates, sp., *Tschudi, l. c.* p. 78; *Günth. l. c.* p. 77.
 Strongylopus, *Tschudi, l. c.* p. 79.
 Pyxicephalus, *Tschudi, l. c.* p. 83; *Cope, l. c.*
 Pyxicephalus, sp., *Dum. & Bibr. l. c.* p. 442.
 Limnodytes, *Dum. & Bibr. l. c.* p. 510.
 Pelophylax, *Fitzing. Syst. Rept. i.* p. 31.
 Tomopterna (*Bibr.*), *Günth. l. c.* p. 7.
 Sphærotheca, *Günth. l. c.* p. 20.
 Ranula, *Peters, Mon. Berl. Ac.* 1859, p. 402.
 Dicroglossus, *Günth. Proc. Zool. Soc.* 1860, p. 158; *Cope, l. c.*
 Hoplobatrachus, *Peters, Mon. Berl. Ac.* 1863, p. 449; *Cope, l. c.*
 Staurois, sp., *Cope, l. c.*
 Amolops, *Cope, l. c.*
 Pohlia, *Steindachn. Novara, Amph.* p. 15.
 Pachybatrachus (*non Kieferstein*), *Mivart, Proc. Zool. Soc.* 1868,
 p. 559.
 Clinotarsus, *Mivart, ibid.* 1869, p. 227.
 Trypherosia, *Cope, Proc. Ac. Philad.* 1868, p. 117.
 Maltzania, *Boettger, Abhandl. Senck. Ges.* xii. 1881, p. 417.

Pupil horizontal. Tongue free and deeply notched behind†. Vomerine teeth. Tympanum distinct or hidden. Fingers free; toes webbed, with simple or dilated tips. Outer metatarsals separated by web. Omosternum and sternum with a strong bony style. Terminal phalanges acute, transversely dilated or T-shaped.

Cosmopolitan, except the southern parts of South America and New Zealand; one species from the extreme north of Australia.

The study of the numerous species included here in *Rana* shows the impossibility of dividing them into genera, or even subgenera, according to the dilatation or non-dilatation of the tips of the fingers and toes. The extreme forms, viz. *Rana hexadactyla* and *R. afghana*, show indeed a very marked difference respecting the shape and structure of the fingers and toes—the former having them pointed; the latter dilated into very large disks supported by regularly T-shaped phalanges. But, when we meet with such forms as *R. malabarica*, *R. curtipes*, *R. inguinalis*, &c., we must hesitate before referring them to the “Platydaetylia” or to the “Oxydaetylia,” and, in fact,

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4. *Limnodytes lividus*, Blyth, Journ. As. Soc. xxiii. p. 299.—Colombo.
 5. *Limnodytes nigrovittatus*, Blyth, *ibid.* xxiv. p. 718.—Tenasserim. *see p. 65.*
 6. *Rana altilabris*, Blyth, *l. c.* p. 720.—Pegu.
 7. *Rana neweraellia*, Kelaart, Prodr. Faun. Zeyl. i. p. 192.—Ceylon.
 8. *Limnodytes mutabilis*, Kelaart, *ibid.* ii. p. 19.—Colombo.
 9. *Limnodytes maculata*, Kelaart, *l. c.*—Galle.
 10. *Rana nebulosa*, Hallow. Proc. Ac. Philad. 1860, p. 504.—Hongkong.
 11. *Rana multistriata*, Hallow. *l. c.*—Hongkong.
 12. *Rana adrita*, Troschel, in Müller's Wirbelth. Mex. p. 82.—Mexico.
 13. *Rana missouriensis*, Wied, Reise N. Amer. i. p. 115.—Missouri.
 14. *Rana spinidaetyla*, Cope, Proc. Ac. Philad. 1865, p. 197.—Natal.
 15. *Pyxicephalus frithii*, Theobald, Cat. Rept. As. Soc. Mus. 1868, p. 81.—Birmah.
 16. *Rana circulosa*, Rice & Davis, in Jordan's Man. Vertebr. 2nd edit. p. 255.—Indiana.

† In a few cases the incision is not very deep.

they might just as well be referred to the one as to the other. Besides, the well-known *R. macrodon*, *R. kuhlii*, and others have the tips of the toes dilated into very distinct disks, much more so than several species hitherto referred to *Hylorana*.

I have therefore come to the conclusion that, with regard to the species of this group, the difference in the shape of the fingers and toes cannot be used as generic character, as we should be obliged to place far apart species which, in all other respects, are very much alike. This conclusion was foreseen by Mr. Cope some twelve years ago*. Stating that *Hylorana* stands very near *Rana*, he observes that "it is only to be distinguished from it generically, without the interposition of any possible form which would not unite them. The T-shaped phalange in some *Hylorana* is so weak, while the expansion of the tip of the same in *Rana temporaria* and others is so distinct, as to render the permanent distinction of the two genera a mere matter of future discovery."

It has long been believed that the shape of the tips of the fingers and toes is always in immediate relation with the mode of life of the Frog; but it now appears that several platydactyle species are entirely terrestrial or aquatic, not arboreal.

Had not the species been so numerous, I would have hesitated to separate *Rana* from *Rhacophorus*, which I characterize by the presence of a more or less developed web between the fingers. Though both genera pass into each other and constitute an uninterrupted series of species, I think that division convenient, it being easy to ascertain whether the fingers are quite free or webbed.

As characterized by Dr. Günther and other authors, the genus *Pyxicephalus*, Tschudi (*Tomopterna* (Bibr.), Gthr.), is supposed to differ from *Rana* by a stouter habit, and especially by the great development of the inner metatarsal tubercle, which is large, compressed, shovel-like, as in *Pelobates*, *Scaphiopus*, &c. Had all the species of *Pyxicephalus* a "large and thick head," and all the species of *Rana* the "metatarsal tubercle blunt," it would certainly be very natural to separate these two forms; but such is not the case, and it will be shown that the genera *Pyxicephalus* and *Rana* can no longer be distinguished.

Prof. Peters established many years ago a new genus, *Hoplobatrachus*, for a Ceylonese Frog which, according to him, is exactly intermediate between *Rana* and *Pyxicephalus*. This supposed new Frog is nothing but a variety of *Rana tigrina*. In this species the inner metatarsal tubercle is generally blunt, half as long as the first toe, or even less; other specimens (from Ceylon, Madras, and Malabar) have the tubercle shovel-shaped as in *Pyxicephalus adspersus*, and about as long as the first toe; other specimens are intermediate. These differences in the shape and size of the inner metatarsal tubercle do not correspond with any important character;

* Proc. Amer. Philos. Soc. xi. 1869, p. 168.



and I therefore do not hesitate to unite *Hoplobatrachus ceylanicus* with *Rana tigrina*.

The common *Rana esculenta* furnishes a similar example in favour of this view. In this species the inner metatarsal tubercle is liable to considerable variation. Some specimens, especially those from S. Europe, N. Africa, and W. Asia, exhibit it blunt, small, one third the length of the first toe; most of those from Northern and Central Europe have it compressed, about half as long as the first toe: most of the Chinese and Japanese specimens have it still stronger, very frequently quite as long as the first toe, and closely resembling the spur of *Pelobates*. I may add that I am inclined to consider *Hoplobatrachus reinhardti*, Peters, as based upon one of these oriental specimens of *R. esculenta*: and that I saw some time ago in the Paris Museum a large specimen of the same species labelled *Hoplobatrachus davidi*, sp. n.

On the other hand, in some species of *Pyxicephalus*, viz. *P. natalensis* and *P. rugosus*, the metatarsal tubercle is not more developed than in that form of *R. esculenta* which is intermediate between the extremes.

As regards the stouter habit and the thicker head of *Pyxicephalus* as compared with *Rana*, we must bear in mind that the latter genus includes some very stout species, and that *P. natalensis* has the head very much like the majority of the species of *Rana*.

Synopsis of the Species.

I. PALÆARCTIC SPECIES.

A. Tips of fingers and toes not dilated; belly smooth.

1. Vomerine teeth between the choanæ; a glandular lateral fold; toes entirely webbed.

Fingers pointed; glandular lateral fold as broad as the upper eyelid; a dark band along the hinder side of the thighs 38. *plancyi*, p. 37.

Fingers blunt; glandular lateral fold narrower than the upper eyelid; hinder side of thighs marbled 39. *esculenta*, p. 38.

Upper eyelid glandular and distinctly porous 40. *porosa*, p. 40.

2. Vomerine teeth between the choanæ; no glandular lateral fold; toes incompletely webbed.

Skin very warty 33. *rugosa*, p. 35.

3. Vomerine teeth extending beyond the level of the hinder edge of the choanæ; a glandular lateral fold: toes incompletely webbed; a dark temporal spot.

a. Tibio-tarsal articulation not or hardly reaching the tip of the snout.

Inner metatarsal tubercle blunt; snout obtuse 50. *temporaria*, p. 44.

Inner metatarsal tubercle compressed; snout pointed 51. *arvalis*, p. 45.

b. Tibio-tarsal articulation reaching beyond the tip of the snout.

Tympanum not two thirds the width of the eye; first finger not extending beyond second; belly spotted 53. *iberica*, p. 46.

Tympanum hardly two thirds the width of the eye; belly spotted 54. *latastii*, p. 46.

Tympanum nearly as large as the eye, close to it; belly immaculate 55. *agilis*, p. 46.

Snout very long; no outer metatarsal tubercle 57. *japonica*, p. 47.

B. Tips of fingers and toes dilated into large disks; belly granulate 107. *buergeri*, p. 73.

II. AMERICAN SPECIES.

A. Tips of toes not dilated.

1. The web extends to the tip of the fourth toe.

Tympanum nearly as large as the eye; tibio-tarsal articulation not reaching the eye 34. *montezumæ*, p. 35.

Tympanum as large as or larger than the eye; tibio-tarsal articulation reaching the eye 35. *catesbiana*, p. 36.

2. Toes at least three-fifths webbed, the web not extending to the tip of the fourth toe.

a. Tympanum as large as or larger than the eye.

First finger not extending beyond second .. 36. *clamata*, p. 36.

b. Tympanum smaller than the eye.

a. Vomerine teeth between the choanæ.

Habit stout; skin porous 37. *septentrionalis*,
Head moderate; tympanum nearly as large as the eye; glandular lateral fold moderate [p. 37.

rate 43. *halecina*, p. 41.

Head moderate; male with external vocal sacs 41. *utricularia*, p. 40.

Head large; male with external vocal sacs. 42. *arcolata*, p. 41.

Tympanum nearly as large as the eye; glandular lateral fold very broad 44. *palustris*, p. 42.

Tympanum about half the size of the eye.. 45. *macroglossa*, p. 42.

Tympanum nearly as large as the eye; first finger not longer than second 46. *maculata*, p. 42.



- Tympanum two thirds the size of the eye;
 first finger extending scarcely beyond
 second; head much longer than broad . . . 47. *lecontii*, p. 42.
- Tympanum two thirds the size of the eye;
 snout short, rounded 48. *nigricans*, p. 43.

β. Vomerine teeth extending beyond the level of the
 hinder edge of the choanæ.

- Tibio-tarsal articulation not reaching the
 tip of the snout; a conical outer meta-
 tarsal tubercle 49. *pretiosa*, p. 43.
- Tibio-tarsal articulation not reaching the
 tip of the snout; no outer metatarsal
 tubercle 52. *cantabrigensis*,
 [p. 45.
- Tibio-tarsal articulation reaching the tip of
 the snout, or beyond; a rounded outer
 metatarsal tubercle 56. *silvatica*, p. 47.

3. Toes hardly half webbed.

- Habit stout 32. *capito*, p. 34.

B. Tips of toes dilated into small disks.

- Toes entirely webbed; first finger longer
 than second 59. *palmipes*, p. 48.
- Toes incompletely webbed; tympanum as
 large as the eye 60. *copii*, p. 49.
- First finger not longer than second 61. *nigrilatus*, p. 49.
- Toes entirely webbed; skin shagreened
 above 62. *chrysoprasina*,
 [p. 49.
- Toes incompletely webbed; tympanum two
 thirds the width of the eye; skin sha-
 greened above 63. *cæruleopunctata*,
 [p. 50.

III. INDIAN AND AUSTRALIAN SPECIES.

A. Fingers and toes acutely pointed, the latter very broadly
 webbed.

- First finger extending a little beyond second . . . 1. *hexadactyla*, p. 17.
- First finger not extending beyond second 2. *cyanophlictis*, p. 17.

B. Fingers pointed or blunt; toes blunt or slightly dilated at
 the tips.

1. Toes more than half webbed.

a. Tympanum indistinct or hidden.

- First finger not extending quite as far as
 second; upper eyelid very narrow; skin
 of back with transverse plaits 5. *corrugata*, p. 19.

- First finger extending a little beyond second; upper eyelid narrow 6. *kuhlîi*, p. 20.
 Head large; tibio-tarsal articulation reaching nearly the tip of the snout..... 7. *laticeps*, p. 20.
 Toes not entirely webbed; tibio-tarsal articulation reaching a little beyond the tip of the snout 8. *yunnanensis*, p. 21.
 A glandular lateral fold; tibio-tarsal articulation reaching the tip of the snout or beyond 10. *liebighii*, p. 21.

b. Tympanum perfectly distinct.

- Vomerine teeth in two oblique series extending much beyond the choanæ; no tooth-like prominence in the lower jaw . 13. *grunniens*, p. 23.
 Vomerine teeth in two oblique series commencing from the inner front edge of the choanæ 14. *macrodon*, p. 24.
 Vomerine teeth in two oblique oval groups commencing on a level with the hinder edge of the choanæ 15. *modesta*, p. 25.
 Tympanum as large as the eye..... 16. *plicatella*, p. 26.
 A much developed membranaceous fringe along the outer side of the fifth toe; inter-orbital space narrower than the upper eyelid 17. *tigrina*, p. 26.
 Tibio-tarsal articulation reaching the tip of the snout: upper parts strongly warty . 20. *verrucosa*, p. 29.
 Habit slender; a glandular lateral fold .. 58. *guentheri*, p. 48.

2. Toes not more than half webbed.

- Inner metatarsal tubercle blunt 19. *gracilis*, p. 28.
 Inner metatarsal tubercle shovel-shaped; vomerine teeth placed transversely behind the choanæ. 31. *khasiana*, p. 34.
 Inner metatarsal tubercle shovel-shaped; tarso-metatarsal articulation reaching a little beyond the tip of the snout 21. *rufescens*, p. 29.
 Inner metatarsal tubercle shovel-shaped; tympanum two thirds the size of the eye 27. *dobsonii*, p. 32.
 Inner metatarsal tubercle shovel-shaped; tympanum half the size of the eye 26. *breviceps*, p. 32.

C. Tips of fingers and toes more or less dilated.

1. A glandular lateral fold.

a. Tips of fingers and toes simply swollen.

- Fourth toe about as long as the distance from vent to tympanum 72. *macroductyla*, p. 54.

- Toes rather more than half webbed; tibio-tarsal articulation reaching the tip of the snout, or nearly so far 81. *macularia*, p. 60.
- Toes half webbed; tibio-tarsal articulation reaching the eye 82. *malabarica*, p. 60.
- Toes nearly entirely webbed; tibio-tarsal articulation reaching the eye; head large 84. *curtipes*, p. 61.
- Toes nearly entirely webbed; head moderate 78. *margaritana*, p. 58.

b. Tips of fingers and toes dilated into regular disks.

α. Vomerine teeth between the choanæ.

- Femoro-tibial articulation reaching the tympanum 93. *jerboa*, p. 67.
- Two rather indistinct metatarsal tubercles; tympanum two thirds the size of the eye; hind limbs with dark cross-bars 85. *alticola*, p. 62.
- Two very distinct metatarsal tubercles; tympanum two thirds the size of the eye; hind limbs not cross-barred 88. *krefftii*, p. 64.
- Two metatarsal tubercles, the inner very prominent and large; hind limbs with dark cross-bars 89. *tytleri*, p. 65.
- One metatarsal tubercle; hind limbs not cross-barred 90. *erythræa*, p. 65.
- One metatarsal tubercle; disks of fingers half the size of tympanum 91. *chalconota*, p. 66.

β. Vomerine teeth extending beyond the level of the hinder edge of the choanæ.

- Interorbital space as broad as the upper eyelid; tympanum three fourths the size of the eye 86. *temporalis*, p. 63.
- Interorbital space rather narrower than the upper eyelid 87. *papua*, p. 64.
- Tympanum two thirds the size of the eye 92. *arfaki*, p. 66.

2. No glandular lateral fold.

a. Vomerine teeth not extending beyond the level of the hinder edge of the choanæ.

- Tympanum half the width of the eye; toes nearly entirely webbed; disks very small 73. *andersonii*, p. 55.
- Tympanum not quite two thirds the width of the eye; toes hardly half webbed 97. *luctuosa*, p. 68.
- ~~Tympanum nearly as large as the eye; toes nearly entirely webbed 101. *celebensis*, p. 70.~~
- Tympanum two fifths the diameter of the eye; toes very broadly webbed; head moderate 101 a. *latopalmata*, [p. 464.]

celebensis

gland.

- Tympanum about one third the width of the eye; toes very broadly webbed; head much elongate 102. *natatrix*, p. 71.
- Tympanum two thirds the width of the eye; toes two-thirds webbed; tips of fingers and toes simply swollen; interorbital space as broad as the upper eyelid; skin strongly granulate 103. *signata*, p. 71.
- Tympanum two thirds the width of the eye; toes two-thirds webbed; tips of fingers and toes simply swollen; interorbital space as broad as the upper eyelid; skin slightly granulate 104. *similis*, p. 72.
- Tympanum one third the width of the eye; snout shorter than the diameter of the eye; belly granulate 106. *mackloti*, p. 72.
- Upper surfaces very warty; toes one-fourth webbed 77 *a. phrynoderma*, [p. 462.
- b.* Vomerine teeth extending beyond the level of the hinder edge of the choanæ.
- α.* A free conical papilla on the middle of the tongue; disks of fingers and toes small.
- Toes two-thirds webbed 74. *beddomii*, p. 55.
- Toes half webbed 75. *semipalmata*, p. 56.
- Toes one-third webbed 76. *leptodactyla*, p. 57.
- Toes one-third webbed; a black spot on the loin 77. *diplosticta*, p. 58.
- β.* Tongue without papilla; disks large.
- Tympanum about half the width of the eye; first finger extending slightly beyond second 98. *chloronota*, p. 69.
- Tympanum hardly one third the width of the eye; first finger not extending quite so far as second 99. *afghana*, p. 69.
- Tympanum hardly one third the width of the eye; fingers very long 100. *formosa*, p. 70.
- Tympanum three fourths the width of the eye 105. *everetti*, p. 72.
- γ.* Tongue without papilla; disks small.
- Tympanum three fifths the width of the eye 108. *glandulosa*, p. 73.

IV. ÆTHIOPIAN SPECIES.

A. Tips of fingers and toes not dilated; inner metatarsal tubercle blunt.

1. Toes at least half webbed.

a. Vomerine teeth in two groups or short series close to the inner front edge of the choanæ.

Toes very broadly webbed; tympanum half the size of the eye 3. *chrenbergii*, p. 18.



- Toes very broadly webbed; tympanum hidden 4. *crassipes*, p. 19.
- Toes entirely webbed; tympanum nearly as large as the eye; a single metatarsal tubercle 66. *oxyrhynchus*, p. 51.
- Toes entirely webbed, the web not emarginate; tympanum nearly as large as the eye; two metatarsal tubercles 67. *longirostris*, p. 52.
- Toes nearly entirely webbed; tympanum two thirds the width of the eye; a tarsal and two metatarsal tubercles. 68. *trinodis*, p. 52.
- Toes two-thirds webbed; tympanum two thirds the width of the eye [p. 52. 69. *mascareniensis*,

b. Vomerine teeth in two series or groups between the choanæ.

- Vomerine teeth in two oblique groups; toes two-thirds webbed..... 12. *subsigillata*, p. 23.
- Vomerine teeth in two oblique series; toes nearly entirely webbed 18. *occipitalis*, p. 27.
- Vomerine teeth in two transverse series; toes two-thirds webbed 65. *angolensis*, p. 50.

c. Vomerine teeth in two groups on a level with the hinder edge of the choanæ.

- Toes not quite two-thirds webbed..... 11. *blanfordi*, p. 23.
- Toes nearly entirely webbed..... 64. *fuscigula*, p. 50.

2. Toes webbed at the base.

a. Vomerine teeth in two long, nearly straight series on a level with the front edge of the choanæ.

- Tibio-tarsal articulation reaching the tip of the snout, or somewhat beyond..... 70. *grayi*, p. 53.
- Tibio-tarsal articulation reaching far beyond the tip of the snout 71. *fasciata*, p. 54.

b. Vomerine teeth in two oblique series between the choanæ . 83. *galamensis*, p. 61.

B. Tips of fingers and toes not dilated; inner metatarsal tubercle shovel-shaped.

- Metatarsal tubercle reaching beyond the tip of the snout 22. *tuberculosa*, p. 30.
- Metatarsal tubercle reaching nearly the tip of the snout; skin smooth..... 23. *natalensis*, p. 30.
- Tympanum rather indistinct; two metatarsal tubercles 24. *cordofana*, p. 31.

Tympanum half the size of the eye ; skin tubercular	25. <i>delalandii</i> , p. 31.
Tympanum nearly as large as the eye ; skin smooth	28. <i>ornata</i> , p. 33.
Tympanum two thirds or three fourths the size of the eye ; back with longitudinal glandular folds	29. <i>adspersa</i> , p. 33.
Tympanum larger than the eye ; no longitudinal folds	30. <i>maltzanii</i> , p. 34.

C. Tips of fingers and toes more or less dilated.

1. A circular flat gland below each thigh on its inner side.

Tympanum hidden	9. <i>guttulata</i> , p. 21.
Tympanum distinct ; first and second fingers equal	96 a. <i>ulcerosa</i> , p. 462.
Tympanum distinct ; first finger not extending as far as second ; tibio-tarsal articulation reaching beyond the eye ..	96 b. <i>femorialis</i> , p. 463.

2. No large gland below the thigh.

a. First finger extending beyond second.

A glandular lateral fold ; tips of fingers and toes simply swollen	79. <i>elegans</i> , p. 59.
A glandular lateral fold ; tips of fingers and toes dilated into regular disks ; belly smooth	80. <i>albilabris</i> , p. 59.
No glandular lateral fold ; tibio-tarsal articulation reaching a good deal beyond the tip of the snout	94. <i>inguinalis</i> , p. 67.

b. First and second fingers equal.

Toes half webbed ; tibio-tarsal articulation not reaching beyond the tip of the snout	73 a. <i>betsileana</i> , p. 460.
Toes three-fourths webbed ; tibio-tarsal articulation not reaching beyond the eye	73 b. <i>curta</i> , p. 461.
Toes half webbed ; tibio-tarsal articulation reaching beyond the tip of the snout ..	107 b. <i>aspera</i> , p. 465.

c. First finger not extending as far as second.

Tympanum more than half the diameter of the eye ; back smooth	95. <i>madagascariensis</i> , [p. 67.
Tympanum more than half the diameter of the eye ; back granulate	96. <i>granulata</i> , p. 68.
Tympanum half the diameter of the eye ; toes entirely webbed ; back smooth	96 c. <i>cowanii</i> , p. 463.
Tympanum half the diameter of the eye ; toes somewhat more than half webbed ; back with narrow glandular folds	107 a. <i>plicifera</i> , p. 464.

1. *Rana hexadactyla*.

Rana hexadactyla, *Günth. Cat.* p. 11.

Rana hexadactyla, *Lesson in Bélang. Voy. Ind. Or., Rept.* p. 331 ;
Tschudi, Batr. p. 80 ; *Günth. Rept. Brit. Ind.* p. 405 ; *Steindachn.*

Novara, Amph. p. 19 ; *Günth. Proc. Zool. Soc.* 1875, p. 568.

Dactylethra bengalensis, *Lesson, Ill. Zool.* pl. 47.

Rana cutipora, *Dum. & Bibr.* p. 339.

— *robusta*, *Blyth, Journ. As. Soc.* 1854, p. 298.

Vomerine teeth in two oblique series extending beyond the hinder edge of the choanæ. Head moderate ; snout rather pointed ; canthus rostralis indistinct ; interorbital space much narrower than the upper eyelid ; tympanum distinct, as large as the eye. Fingers slender, pointed, first extending a little beyond second ; toes webbed to the tips, which are pointed ; fourth toe not very much longer than third or fifth ; subarticular tubercles of fingers and toes very small ; inner metatarsal tubercle small, conical ; no outer tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the eye. Skin smooth, with more or less distinct rows of pores round the neck, sides, and belly. Brown above ; sometimes a light vertebral line ; two blackish streaks on the hinder side of the thighs, sometimes indistinct ; young beautifully striped. Male with two external vocal vesicles opening by two slits beneath the angles of the mouth.

India.

a. Hgr. ♀.

b. Many spec., yg.

c-d. ♂ ♀.

e. Skeleton, ♀.

f. Stuffed.

g-i. Yg.

k, l. ♀ & hgr.

m-n. ♀ & hgr. ♂.

o. Yg.

p. Hgr. ♀.

~~Nepal.~~

Malabar.

Madras.

India.

India.

— ?

Ceylon.

Ceylon.

Ceylon.

S. Ceylon.

~~Dr. Scully [C.].~~

Col. Beddome [P.]. (As
typical of *Rana vittata*.)

T. C. Jerdon, Esq. [P.].

Sir A. Smith [P.].

T. C. Jerdon, Esq. [P.]. (As
Pyxicephalus pluvialis.)

Sir A. Smith [P.].

G. H. K. Thwaites, Esq. [P.].

2. *Rana cyanophlyctis*.

Rana leschenaultii, *Günth. Cat.* p. 11.

Rana cyanophlyctis, *Schneid. Hist. Amph. i.* p. 137 ; *Peters, Mon. Berl. Ac.* 1863, p. 78 ; *Günth. Rept. Brit. Ind.* p. 406 ; *Steindachn.*

Novara, Amph. p. 20 ; *Stoliczka, Proc. As. Soc.* 1872, p. 102.

— *bengalensis*, *Gray, Ind. Zool.* ; *Kelaart, Prodr. Faun. Zeyl. i.* p. 192.

— *leschenaultii*, *Dum. & Bibr.* p. 342 ; *Cantor, Cat. Mal. Rept.* p. 138.

Dicroglossus adolfi, *Günth. Proc. Zool. Soc.* 1860, p. 158, pl. 28. f. B, and *Rept. Brit. Ind.* p. 402.

Vomerine teeth in two small oblique series extending a little beyond the hinder edge of the choanæ. Head moderate; snout scarcely pointed; canthus rostralis indistinct; interorbital space much narrower than the upper eyelid; tympanum distinct, two thirds the size of the eye. Fingers slender, pointed, first not extending beyond second; toes webbed to the tips, which are pointed, fourth not much longer than third and fifth; subarticular tubercles of fingers and toes small; inner metatarsal tubercle small, conical, much like a rudimentary toe. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches generally a little beyond the eye. Skin with small tubercles and warts above; besides, more or less distinct rows of pores. Brown or olive above, dark spotted or marbled; two blackish streaks on the hinder side of the thighs, seldom absent; beneath often speckled with blackish. Male with vocal vesicles as in *R. hexadactyla*. Small species.

S.E. Asia.

<i>a-e</i> . ♂ ♀.	Pishiu, Baluchistan.	W. T. Blanford, Esq. [P.].
<i>f</i> . Several spec., ♀ & yg.	Cashmere.	T. C. Jerdon, Esq. [P.].
<i>g-h, i, k</i> . ♂ ♀.	Himalayas.	Messrs. v. Schlagintweit [C.]. (Types of <i>Dicroglossus adolfi</i> .)
<i>l</i> . ♀.	Nilgherries.	F. Day, Esq. [P.].
<i>m-n</i> . Hgr.	Malabar.	Col. Beddome [P.].
<i>o-p, q-r</i> . ♀.	Godaveri Valley.	W. T. Blanford, Esq. [P.].
<i>s</i> . ♂.	Ceylon.	Dr. Kelaart [P.].
<i>t-w</i> . ♀.	Ceylon.	Ind. Mus. (<i>Kelaart</i>).
<i>x-z, a-β, γ, δ, ε-ι, κ-μ</i> . Many spec.: ♂, ♀, yg., & larvæ.	Ceylon.	
<i>ν-ξ</i> .	Pinang.	Typical specimens of Cantor's <i>R. hexadactyla</i> .

3. *Rana ehrenbergii*.

Rana cutipora, *Martens, Nomencl. Mus. Berol.* p. 38.
— *ehrenbergii*, *Peters, Mon. Berl. Ac.* 1863, p. 79.

Vomerine teeth in two small oblique series commencing close to the inner edge of the choanæ; lower jaw with two bony prominences in front. Habit stout. Tympanum distinct, half the size of the eye. Fingers pointed; toes very broadly webbed; a single, inner, metatarsal tubercle. Above with small, rather indistinct, flat warts; upper eyelid with cross folds behind; a more or less distinct fold behind the eyes. Male with vocal vesicles as in *R. hexadactyla*.

Arabia.

o. ♂.	I in Yemen, S. Arabia.	Doria.
	- Is <i>Rana ehrenbergii</i>	
π. ♀	Nepal.	Scully.
p. 6. ♂♀	Quetta.	Blanford.
I-V. ♂♀	Trevandrum, Travancore.	Ferguson.
γ. aa. ♂♀ + hys.	Benares.	Flower.
bb.	Several spec. Haithalhim, nr. Ader.	Yerbury
cc.	Larva.	" " "

= *Rana cyanophlyctis*.

~~g.~~ ♀
Th. ♀

Ceylon.
Punduloya, 4,000 ft.

Dobson.
Green.

4. *Rana crassipes*.

Rana crassipes, *Buchh. & Peters, Mon. Berl. Ac.* 1875, p. 201.



Upper surface of head.



Lower surface of foot.

Vomerine teeth in two very small groups close to the inner front edge of the choanæ; two slight bony prominences in front of the lower jaw. Habit stout. Head moderate; snout very short, slightly pointed; canthus rostralis rounded; eyes very prominent; interorbital space half the width of the upper eyelid; tympanum hidden, two thirds the size of the eye. Fingers rather short, pointed, first shorter than second; toes short, fourth not very much longer than third and fifth, slightly dilated at the tips, very broadly webbed; subarticular tubercles of fingers and toes very small; a scarcely prominent, oval, inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the eye. Skin smooth; a transverse fold uniting the hinder edges of the upper eyelids; a stronger fold from the eye to the arm. Uniform brown, lighter beneath. Male without vocal sac.

W. Africa.

a. ♂.
b. Hgr.

River Nodogo, W. Africa.
Gaboon.

5. *Rana corrugata*.

Rana kuhlii, var. B, *Günth. Cat.* p. 8.

Rana corrugata, *Peters, Mon. Berl. Ac.* 1863, p. 412.

— *kuhlii*, part., *Günth. Rept. Brit. Ind.* p. 404, pl. 26. f. B.

Closely allied to *R. kuhlii*. Interspace between the choanæ narrower; eyes more oblique, and upper eyelids narrower still; first finger not extending quite as far as second; toes rather shorter. Skin of the back with transverse plaits. Light cross band between the eyes very distinct.

Ceylon; ~~S. China.~~

a-d. ♀ & yg.
e. Yg.
f. ♂.

Ceylon.
S. Ceylon.
~~Ningpo~~ Ceylon.

6. *Rana kuhlii*.

Rana kuhlii, var. A et C, *Günth. Cat.* p. 8.

Rana kuhlii (*Schleg.*), *Dum. & Bibr.* p. 384; *Anders. Anat. Zool.*

Res. Yunnan, p. 838.

— *kuhlii*, part., *Günth. Rept. Brit. Ind.* p. 404, pl. 26. f. A.

— *conspicillata*, *Günth. Proc. Zool. Soc.* 1872, p. 595, pl. 40. f. A;
id. Zool. Record, ix. p. 97.

Vomerine teeth in two small oblique series behind the choanæ; lower jaw with two more or less developed tooth-like prominences in front. Head moderate; snout short, without canthus rostralis; eyes prominent, turned upwards; upper eyelid rather narrow; interorbital space generally broader than the upper eyelid; tympanum hidden. Fingers moderate, first extending a little beyond second; toes broadly webbed, fourth only one fifth longer than fifth, the tips dilated into small disks; subarticular tubercles of fingers and toes well developed; inner metatarsal tubercle elongate, narrow, blunt; no outer tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches usually the eye or scarcely beyond, sometimes the tip of the snout. Above with short longitudinal glandular folds or rounded tubercles, sometimes nearly smooth, except upon the tibiæ. Brown above, with a rather indistinct light cross band between the eyes; sometimes a light vertebral stripe. Male without vocal sac.

Indian Archipelago; S. China.

a. Hgr. ♀ .	Java.	Leyden Museum.
b. Many spec.: ♂, ♀, & ^{vg.}	Matang, Borneo.	(Types of <i>R. conspicillata</i> .)
c-d. Hgr. & ♀.	Matang, Borneo.	
e. Hgr. & ♀.	Celebes.	Sir A. Smith [P.]
f. ♀.	Ningpo	<i>see R. Boulengeri</i>

7. *Rana laticeps*. (PLATE I. fig. 1.)

Vomerine teeth in two oblique oval groups behind the level of the hinder edge of the choanæ; lower jaw with two bony prominences in front, acute and directed backwards in the adult male. Head large, triangular, especially in the adult male; snout short; subacuminate, with rounded canthus rostralis; interorbital space broader than the upper eyelid; tympanum scarcely distinct, two thirds the size of the eye. Fingers moderate, first not extending beyond second; toes moderate, nearly entirely webbed; tips of toes dilated into very small disks; subarticular tubercles well developed; inner metatarsal tubercle large, elongate, blunt; no outer tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches nearly the tip of the snout. Upper parts with small elongated warts and rounded tubercles; a glandular fold above the tympanum. Brown above, indistinctly marbled with darker; a light, dark-edged vitta between the upper eyelids; legs

3. ♂. ♂♀ *Sereinus, Mentawai I.^m Modiglianii*

g-h. ♂ Tenasserim. Beddome.
i-m. Agr. & yg. Pegu. Theobald.
n-o. Ad. Plapoo, Tenasserim. Fea.
p. ♀ Kina Baloo. Whitehead (One of the types
of *R. paradoxa* Moeg.)
r-r. ♂♀ Ponce, Yunnan. Anderson.
s-u. Ad. Kina Baloo. Everett.
t. Agr. Bongou. N. Borneo. "

Rana bufoniformis, Blgr.
♀ Treasury I? Solomon Group. Guppy.
(Type.)
♀ Faro I? Woodford.

c. ♀

Malacca.

Hervey.

f. ♀
g. Her.
h. 47.

Madagascar.
" "
Tianarantsoa.

Majaster.
Boucard.
Major.

indistinctly cross-barred; throat spotted with brown. Male without vocal sac. From snout to vent 47 millim.

India.

- a. Many spec.: ♂, ♀, hgr., Khassya. T. C. Jerdon, Esq. [P.]
& yg.
b. Hgr. Bengal. Col. Beddome [P.]. (As *Poly-
pedates affinis*.)

8. *Rana yunnanensis*.

Rana yunnanensis, Anders. *Anat. Zool. Res. Yunnan*, p. 839, pl. 78. f. 2.

Vomerine teeth but little developed, and in two short oblique ridges on the inner side of the choanæ. Head moderate; snout short, somewhat pointed; tympanum rather indistinct, half the size of the eye. Fingers moderate, first not extending beyond second; toes not entirely webbed, slightly dilated at the tips; inner metatarsal tubercle small, laterally compressed, sharp-edged, crescentic. The hind limb being carried forwards along the body, the metatarsal tubercle reaches a little beyond the snout. Upper surfaces densely covered with round warty tubercles, each surmounted by a small black horny granule; a glandular fold from the eye over the tympanum to the shoulder. Uniform greenish olive-brown, with obscure dark bands from the orbit to the lip and on the upper surface of the limbs; under surface brownish yellow, reticulately spotted with deep brown.

• Hotha.

9. *Rana guttulata*. (PLATE II.)

Rana guttulata, Bouleng. *Ann. Mag. N. H.* (5) vii. p. 361.

Vomerine teeth in two small groups behind the level of the hinder edge of the choanæ. Head rather large, depressed; snout short, rounded, with rounded canthus rostralis; loreal region concave; interorbital space as broad as or slightly broader than the upper eyelid; tympanum small, hidden. Fingers rather short, first not extending as far as second; toes rather short, broadly webbed; tips of fingers and toes dilated into small disks; subarticular tubercles small; a blunt, oval, inner metatarsal tubercle; no outer one. The hind limb being carried forwards along the body, the tibiotarsal articulation reaches the eye. Skin finely granular above; a fold from the eye to the shoulder; a circular flat gland below each thigh on its inner side. Dark brown above, minutely dotted with yellowish; whitish beneath, immaculate. Male without vocal sacs.

Madagascar.

a-c, d-e. ♂ ♀. S.E. Betsileo. Mr. Bartlett [C.]. (Types.)

10. *Rana liebighii*.

Megalophrys gigas, Blyth, *Journ. As. Soc.* xxiii. p. 299.

Rana liebighii, Günth. *Proc. Zool. Soc.* 1860, p. 157, pl. 28. f. A; *id. Rept. Brit. Ind.* p. 407; *Anders. Proc. Zool. Soc.* 1871, p. 198; *Theobald, Proc. As. Soc.* 1873, p. 111; *Günth. Proc. Zool. Soc.* 1875, p. 567.

— *sikkimensis*, Jerdon, *Proc. As. Soc.* 1870, p. 83; *Stoliczka, Proc. As. Soc.* 1872, p. 131.

— *gammii*, *Anders. Journ. As. Soc.* 1871, p. 21.

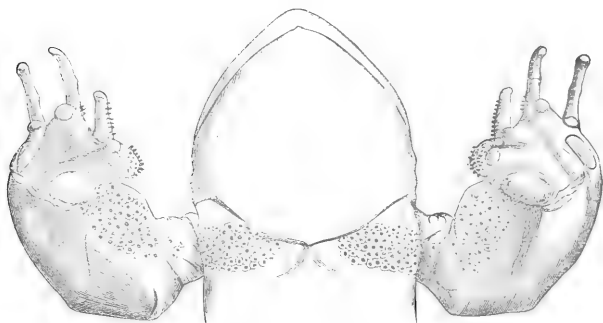
— ? *vicina*, *Stoliczka, loc. cit.*

— *gigas*, *Peters, Sitzb. Ges. nat. Fr. Berl.* 1881, p. 87.

Vomerine teeth in two small oblique groups extending a little beyond the hinder edge of the choanæ. Head moderate, much depressed; snout very short, rounded; canthus rostralis indistinct; interorbital space nearly as broad as the upper eyelid; tympanum rather small, hidden. Fingers moderate, first not extending beyond second; toes moderate, truncate, entirely webbed; subarticular tubercles of fingers and toes not much developed; inner metatarsal tubercle oval, little prominent; no outer tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the tip of the snout or beyond. Skin smooth above, seldom warty; a strong fold of the skin above the tympanum, and another, sometimes indistinct, uniting the hinder edges of the upper eyelids; a narrow glandular fold on each side of the back. Brown above; a black line on the canthus rostralis and on the temporal region; lateral folds black-margined; legs indistinctly barred across. Male with two internal vocal sacs.

The breeding male is remarkable by the extreme thickness of its fore arms, the inner sides of which are studded with small conical black spines, each supported on a rounded base produced by a swelling of the skin. A large patch of similar spines exists on each side of the breast; the whole inner side of the inner metacarpal tubercle and of the first and second digits, and the base of the third digit also, bear similar spines, but they are closer together.

Himalayas.



Breeding male.

Rana sternostigmata, Murr.

- a, b. ♂ Kurruehee + Luetta, Lind. Murray.
c-d. ♂ Luetta. Blanford.

Rana boulengeri, Gthr.

- b. ♂ Ichang. Pratt. (Types)
♀ Ningpo. Cuming.
l. yg. Da-laeu-saen, S. W. of Ningpo. Walker
yg. Ning Kong jow, " " " Bassett Smith.

h. ♂ }
i-m ♀ eggs }
w. ♀ . skel.

Darjeeling.

"

Blanford.

"

<i>a. ♂.</i>	Nepal.	B. H. Hodgson, Esq. [P.]. (Type.)
<i>b. ♂.</i>	Sikkim.	Messrs. v. Schlagintweit [C.].
		(Type.)
<i>c-d. ♀.</i>	Lialing, Sikkim, 8500 ft.	W. T. Blanford, Esq. [P.].
<i>e, f-g.</i>	Darjeeling.	W. T. Blanford, Esq. [P.].

11. *Rana blanfordii*. (PLATE I. fig. 2.)

Vomerine teeth in two small oblique groups on a level with the hinder edge of the choanæ. Head moderate; snout short, rounded, with rounded canthus rostralis; interorbital space as broad as the upper eyelid; tympanum scarcely half the width of the eye, hidden. Fingers moderate, first not extending as far as second; toes moderate, not quite two-thirds webbed; tips of toes swollen into very small disks; subarticular tubercles of fingers and toes not much developed; inner metatarsal tubercle elongate, rather indistinct; no outer tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches nearly the tip of the snout. Skin with indistinct flat warts on the sides of the body; a fold on the temporal region. Olive above, with small black spots; a black streak between the eyes, and another on the canthus rostralis and on the temporal region. Male without vocal sacs. From snout to vent 49 millim.

Arabia?

<i>a-b. ♂ ♀.</i>	Muscat?	W. T. Blanford, Esq. [P.].
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12. *Rana subsigillata*.

Rana subsigillata, *A. Dum. Rev. Mag. Zool.* 1856, p. 560; *id. Arch. Mus.* x. p. 224, pl. xviii. f. 1.

Vomerine teeth in two oblique groups between the choanæ; lower jaw with two slight bony prominences in front. Head moderate; snout rather elongate, rounded, without canthus rostralis; interorbital space narrower than the upper eyelid; tympanum not very distinct, two thirds the size of the eye. Fingers moderate, first extending beyond second; toes moderate, two-thirds webbed; subarticular tubercles of fingers and toes well developed; a single, small, oval, inner metatarsal tubercle. Skin nearly smooth; a slight fold from the hinder edge of the eye above the tympanum, extending across the chest. Brown above, indistinctly spotted; rather indistinct dark bars across the limbs. Male without vocal sacs.

W. Africa.

<i>a. ♂.</i>	Old Calabar.
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13. *Rana grunniens*.

Rana grunniens, *Günth. Cat.* p. 10.

Rana grunniens, *Laud. Rain.* p. 65, pl. 21; *id. Rept.* viii. p. 127; *Merr. Tent.* p. 174; *Dum. & Bibr.* p. 380.

Rana subsaltans, *Gravenh. Delic. Batr.* p. 35, pl. vii.
 — *hydromedusa*, (*Kuhl*) *Tschudi, Batr.* p. 80.

Vomerine teeth in two oblique series extending much beyond the level of the hinder edge of the choanæ. Head moderate; snout rounded; tympanum distinct, half the size of the eye; interorbital space as broad as the upper eyelid. Fingers moderate, first extending beyond second; toes broadly webbed, with slightly swollen tips; subarticular tubercles of fingers and toes well developed; an oblong inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the eye. Skin smooth; upper eyelid tubercular; a fold from the posterior angle of the eye to the shoulder. Brown above, with a few reddish spots; hinder side of thighs marbled with dark brown.

Amboyna; Java.

a. Skeleton.
 b. Hgr.

Java.
 — ?

14. *Rana macrodon*. (PLATE I. fig. 4, inside of mouth.)

Rana macrodon, *Günth. Cat.* p. 8.

Rana macrodon, (*Kuhl*) *Tschudi, Batr.* p. 80; *Dum. & Bibr.* p. 382; *Peters, Mon. Berl. Ac.* 1871, p. 650; *Blanf. Proc. Zool. Soc.* 1881, p. 225, pl. xxi. f. 4.

— *fusca*, *Blyth, Journ. As. Soc.* xxxiv. p. 719; *Anders. Proc. Zool. Soc.* 1871, p. 197; *Stoliczka, Journ. As. Soc.* 1873, p. 115; *Anders. Anat. Zool. Res. Yunnan*, p. 837.

Ixalus aurifasciatus, *Peters, Mon. Berl. Ac.* 1863, p. 455.

Vomerine teeth in two strong oblique series commencing from the inner anterior angle of the choanæ; lower jaw with two fang-like bony prominences in front, sometimes scarcely developed. Head large; snout rather pointed; occiput more or less swollen on the sides; interorbital space generally one half broader than the upper eyelid; tympanum distinct, variable in size, generally much smaller than the eye. Fingers moderate, first much longer than the second; toes broadly webbed, with distinctly swollen tips; subarticular tubercles of fingers and toes well developed; inner metatarsal tubercle elongate, blunt; no outer tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the eye or a little beyond. Skin smooth above, or with small rounded warts; upper eyelid tubercular: a strong fold above the tympanum. Brown or blackish above; sometimes a light dorsal stripe. Male without vocal sacs.

Young specimens have a very different appearance from that of the adult, having a narrow glandular fold on each side of the back, and the interorbital space not broader than the upper eyelid. Gradually the glandular fold disappears and the interorbital space becomes broader.

E. Indies.

r-x. ♀	Simasserin.	Beddome.
t-u. ♂♀	Singapore.	Dennys.
v-x. 1/2 Agr.	Nias.	Sandemann.
z. Agr.	Larut, Perak.	Wray.
aa-dd. Agr. & Engano I?	S. W. Sumatra,	Modigliani.
ee. ♀	Int. Dulit, Borneo.	Hose.
ff-ii. Ad. & Agr.	Sarawak.	Everett.
kk. Ad.	Merabak, N. Borneo.	"
ll-uu. Ad. & Agr.	Bongou, N. Borneo	"
oo. Agr.	Balabac.	"
pp. "	Palawan.	"
qq. "	Padas, N. Borneo.	"
rr. ♀	Singapore.	Raffles Mus.
ss-rr. Agr. & Engano I?	Int. Benguet, Luzon.	Whitehead.
ww. Agr.	Singapore.	Ridley.
xx. ♂	St. Natuna I?	Hose.
yy. Agr.	Pata R., Sarawak.	"
zz-b? ♀ & Engano I?	Sandakan, N. Borneo.	Cator.

h-m. i. Agr.	Simasserin	Beddome.
d. Agr.	Celebes.	Sarasin.

a. ♂.	Zamboanga.	Mr. Everett [C.].
b-c. ♂ ♀.	Dinagat Islands.	Mr. Everett [C.].
d-e, f-g. ♂ & yg.	Laguna del Bay.	Dr. A. B. Meyer [C.].
h-i. ♂ & hgr.	Negros.	Dr. A. B. Meyer [C.].
k. ♂.	Sarawak.	Mr. Everett [C.].
l. ♂.	Java.	Sir A. Smith [P.].
m. ♂.	Java.	Dr. Ploem [C.].
n-o. ♂ ♀.	Singapore.	Dr. Dennys [P.].
p. ♀.	Tenasserim.	W. Theobald, Esq. [P.] (As <i>Rana fusca</i> .)
q. ♀ skeleton.	Philippines.	

15. *Rana modesta*. (PLATE I. fig. 3.)

Vomerine teeth in two oblique oval groups commencing on a level with the hinder edge of the choanæ; lower jaw with two generally strong bony prominences in front, directed backwards. Head moderate; snout short, rather pointed; interorbital space nearly as broad as the upper eyelid; tympanum distinct, not quite two thirds the size of the eye. Fingers moderate, first extending much beyond second; toes moderate, entirely webbed; cutaneous fringe along the outer side of the fifth toe slightly developed; tips of toes dilated into small disks; subarticular tubercles of fingers and toes moderate; inner metatarsal tubercle small, oval; no outer tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches a little beyond the eye. Skin of the back with rather indistinct short longitudinal glandular folds; upper eyelids tubercular; a more or less distinct fold of the skin between the latter; a strong fold above the tympanum. Brown above, indistinctly spotted; sometimes two lighter vittæ on the back and the canthi rostrales, meeting on the tip of the snout; sometimes a light dorsal stripe; hinder side of thighs dark brown, white-marbled; beneath more or less speckled with brown. Male with two small internal vocal sacs. From snout to vent 7 centim.

This new species is allied to *R. tigrina* and *R. macrodon*. It differs from both by the much smaller size and the arrangement of the vomerine teeth; from the former chiefly by a broader interorbital space and smaller tympanum, longer fingers, slightly developed vocal sacs, &c.; from the latter by a smaller head, generally a narrower interorbital space, and the presence of vocal sacs.

Celebes.

a. Several spec., ♂ ♀.	Gorontalo.	
b. ♂.	Gorontalo.	Dr. A. B. Meyer [C.].
c. ♂.	Manado.	Dr. A. B. Meyer [C.].

~~The following specimens are referred with some doubt to this species:—~~

a-d. ♀, hgr. & yg.	<i>Rana doide</i> , Bly.	W. Theobald, Esq.	} Types.
e-i. ♂ ♀	Tenasserim	Beddome.	
k. ♀	"		
l. ♂	King I., Mergui.	Anderson.	
	Karin hills.	Lea.	

16. *Rana plicatella*.

Rana plicatella, *Stoliczka, Journ. As. Soc.* 1873, p. 116, pl. xi. f. 1.

Vomerine teeth in two short oblique converging series; lower jaw with two fang-like projections directed inwards. Head large; snout obtuse, with the canthi rostrales rounded; interorbital space broader than the upper eyelid; tympanum distinct, as large as the eye. First finger extending beyond second; toes three-quarters webbed, dilated at the tips into small disks; a single, inner, elongated, metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches between the eye and the tip of the snout. Skin of the back with about eight longitudinal, somewhat interrupted folds, with numerous small tubercles between them; upper eyelid tubercular. Above greenish brown, with a dark band from the nostril through the eye, continuing behind it; limbs transversely barred; hinder side of the thighs densely and rather minutely variegated with dark brown; a horseshoe-shaped yellow mark, open below, round the vent; beneath white, speckled with dark on the tibiæ and on the feet.

Pinang.

17. *Rana tigrina*.

Rana tigrina, *Günth. Cat.* p. 9.

Rana tigrina, *Daud. Rept.* p. 64, pl. 20, and *Rept.* viii. p. 125; *Merr. Tent.* p. 174; *Cur. R. A.*; *Dum. & Bibr.* p. 375; *Kelaart, Prodr. Faun. Zeyl.* p. 192; *Peters, Mon. Berl. Ac.* 1863, p. 77; *Günth. Rept. Brit. Ind.* p. 407; *Steindachn. Novara, Amph.* p. 17; *Günth. Proc. Zool. Soc.* 1875, p. 567; *Anders. Anat. Zool. Res. Yunnan*, p. 837.

— *cancrivora*, (*Boie*) *Gravenh. Delic.* p. 41; *Tschudi, Batr.* p. 79.

— *brama*, *Lesson, in Bélanger. Voy. Ind. Or., Rept.* p. 329, pl. 6.

— *vittigera*, *Wiegman. Nova Acta Ac. Leop.* 1835, p. 225, t. 21. f. 1.

— *rugulosa*, *Wiegman. l. c.* p. 258, pl. 21. f. 2.

— *crassa*, *Jerdon, Journ. As. Soc.* 1853, p. 581; *Theobald, Cat.*

Rept. As. Soc. Mus. p. 79; *Anders. Proc. Zool. Soc.* 1871, p. 199.

Hydrostentor pantherinus, *Fitzinger. Sitz. Ac. Wien*, xlii. p. 414.

Pyxicephalus fodiens, *Peters, Mon. Berl. Ac.* 1860, p. 186.

Hoplobatrachus ceylanicus, *Peters, Mon. Berl. Ac.* 1863, p. 449;

Günth. Rept. Brit. Ind. p. 410.

Rana latrans, *David, Nouv. Arch. Mus.* vii. 1872, *Bull.* p. 76.

Vomerine teeth in two oblique series commencing from the inner anterior angle of the choanæ; lower jaw with two not very prominent apophyses in front. Head moderate; snout more or less pointed; interorbital space narrower than the upper eyelid; tympanum distinct, about two thirds the size of the eye. Fingers rather short, first extending beyond second; toes moderate, nearly entirely webbed; a much developed membranaceous fringe along the outer side of the fifth toe; subarticular tubercles of fingers and toes moderate; inner metatarsal tubercle very variable, small or large, blunt or shovel-shaped; no outer tubercle. The hind limb being carried forwards

a. ♀ Rana limborgii, W. Sclater
Karin hills. Lea.

a. ♀ Rana palawanensis, Bly.
Palawan. Everett (Types).

a. ♂ Rana microdisca, Bly.
Tawi-Tawi, Sooloo I. Everett.
b. d. ♂ ♀ Akar R., Sarawak. Hsu.
c. ♀ Sandakan, N. Borneo. Cator.

a. c. ♂ ♀ Rana hascheana, Stoll.
great Natuna I. Everett.

nn. Agr.	Mandalay.	Fea.
oo. ♂.	Deli, Sumatra.	Iversen.
pp. ♀.	Toungoo.	Oates.
qq. ss. Larva.	Pondicherry.	Héron-Royer.
tt. uu. Agr.	Trevandrum, Travancor.	Ferguson.
vv. Agr.	Thayetmays, Burma.	Watson.
ww. Several species.	Padas, N. Borneo.	Everett.
xx. Yf.	Java.	Pleu.
yy. zz. ♀ + hgs.	Benares.	Flower.
aa. Agr.	Sandakan, N. Borneo.	Cator.

along the body, the tibio-tarsal articulation reaches the eye, or a little beyond. Skin of the back with longitudinal folds; a strong fold above the tympanum. Brown or olive above, with dark spots; often a light vertebral line. Male with two subgular vocal sacs, conspicuous externally by folds of the skin on the sides of the throat; these regions generally blackish.

E. Indies; S. China.

<i>a, b.</i> ♀.	Shanghai.	R. Swinhoe [C.].
<i>c-d.</i> ♀.	Ningpo.	R. Swinhoe [C.].
<i>e.</i> Yg.	Ningpo.	
<i>f.</i> ♀.	Formosa.	R. Swinhoe [C.].
<i>g.</i> ♀.	Formosa.	M. Dickson, Esq. [P.].
<i>h-i.</i> ♀.	Formosa.	Dr. Collingwood [P.].
<i>k-l.</i> ♂ ♀.	Nepal.	Dr. Scully [C.].
<i>m.</i> ♂.	Sikkim.	Messrs. v. Schlagintweit [C.].
<i>n.</i> Yg.	Nilgherries.	
<i>o.</i> ♀, skin.	Bengal.	
<i>p-q, r.</i> ♀.	Madras.	T. C. Jerdon, Esq. [P.].
<i>s-u.</i> ♀.	Malabar.	Col. Beddome [P.].
<i>v-w, x, y, z-β.</i> ♂ ♀, hgr. & yg.	Ceylon.	
<i>γ.</i> Hgr.	Ceylon.	G. H. K. Thwaites, Esq. [P.].
<i>δ.</i> Yg.	Birmah.	F. Day, Esq. [P.].
<i>ε.</i> ♂.	Pegu.	W. Theobald, Esq. [P.].
<i>ζ.</i> ♂.	Siam.	W. H. Newman, Esq. [P.].
<i>η-ι.</i> ♀.	Pinang.	Dr. Cantor [C.].
<i>κ, λ.</i> ♂ ♀, stuffed.	Pinang.	Major Sykes [P.].
<i>μ.</i> ♀.	Pinang.	Sir A. Smith [P.].
<i>ν-ξ, o.</i> ♂ ♀.	Java.	
<i>π.</i> ♂.	Java.	Mrs. Lyon [P.].
<i>ρ.</i> ♂.	Borneo.	Leyden Museum.
<i>σ-τ.</i> ♂ ♀.	Borneo.	Mr. Dillwyn [P.].
<i>v.</i> ♂.	Borneo.	
<i>φ.</i> ♂.	Manado.	Dr. A. B. Meyer [C.].
<i>χ, ψ, aa, bb, cc.</i> Hgr. & yg.	Philippines.	
<i>dd-cc.</i> ♀.	Surigao.	Mr. Everett [C.].
<i>ff-hh, ii-kk.</i> ♀ & yg.	Laguna del Bay.	Dr. A. B. Meyer [C.].
<i>ll.</i> Skeleton.	Laguna del Bay.	
<i>mm.</i> ♂.	— ?	T. C. Jerdon, Esq. [P.]. (As typical of <i>Rana crassa</i> .)

18. *Rana occipitalis*.

Rana occipitalis, Günth. Cat. p. 130, pl. xi.

Rana hydraletis, (Boie) Peters, Mon. Berl. Ac. 1863, p. 78.

— *bragantina*, Bocage, Rev. Mag. Zool. 1864, p. 253.

— *occipitalis*, Bocage, Journ. Sc. Lisb. 1866, i. p. 73.

Resembles in every respect *Rana tigrina*, but with a fold of the skin uniting the posterior angles of the upper eyelids. Male with vocal vesicles placed as in *R. tigrina*, but more developed.

W. Africa.

<i>a. ♂.</i>	Angola.	Prof. Barboza du Bocage [P.].
<i>b-d. ♀.</i>	Gambia.	Sir A. Smith [P.].
<i>e-g, h-i, k. ♂ ♀.</i>	Africa.	Sir A. Smith [P.].
<i>l. ♀.</i>	W. Africa.	Mr. Fraser [C.].
<i>m. ♂.</i>	W. Africa.	Prof. Barboza du Bocage [P.].

19. *Rana gracilis*. = *limnocharis*.

Rana vittigera, Günth. Cat. p. 9.

Rana gracilis, Wieg. Nova Acta Ac. Leop. 1835, p. 257; Peters, Mon. Berl. Ac. 1863, p. 78; Günth. Rept. Brit. Ind. p. 409; Steindachn. Novara, Amph. p. 18; Stoliczka, Journ. As. Soc. 1870, p. 142; Anders. Proc. Zool. Soc. 1871, p. 200; Günth. Proc. Zool. Soc. 1875, p. 567; Anders. Anat. Zool. Res. Yunnan, p. 840.

— *nilagirica*, Jerdon, Journ. As. Soc. 1854, p. 531.

— *agricola*, Jerdon, l.c.

— *brevipalmata*, Peters, Mon. Berl. Ac. 1871, p. 646.

— *lymnocharis*, (Boie) Stoliczka, Proc. As. Soc. 1872, p. 102, and Journ. As. Soc. 1873, p. 116.

Very closely allied to *R. tigrina*, from which it differs chiefly in its smaller size, half-webbed toes, and the presence of a small outer metatarsal tubercle, which is, however, sometimes indistinct. The relative length of the hind limbs is very variable.

E. Indies; S. China.

<i>a-b, c-d, e-g. ♂ ♀,</i> hgr. & yg.	Shanghai.	R. Swinhoe [C.].
<i>h. Several spec.</i>	Chusan.	East-India Company [P.].
<i>i-k. ♀ & hgr.</i>	Szechuen.	R. Swinhoe [C.].
<i>l. Many spec.: ♀, hgr.,</i> & yg.	Ningpo.	
<i>m. ♀.</i>	Loochoo.	A. Collie, Esq. [P.].
<i>n-o. ♂ ♀.</i>	Formosa.	Dr. Collingwood [P.].
<i>p. ♀.</i>	Formosa.	M. Dickson, Esq. [P.].
<i>q-s. ♀ & yg.</i>	Hong Kong.	J. C. Bowring, Esq. [P.].
<i>t. ♀.</i>	Hainan.	R. Swinhoe [C.].
<i>u-x. ♂, ♀, & yg.</i>	China.	J. Reeve, Esq. [P.].
<i>y. Skeleton.</i>	China.	J. Reeve, Esq. [P.].
<i>z. Several spec., ♀ &</i> <i>yg.</i>	Jamu, Hima- lavas.	Messrs. v. Schlagintweit [C.].
<i>a. Many spec.: ♂, ♀,</i> & yg.	Sikkim.	T. C. Jerdon, Esq. [P.].
<i>β. Several spec., ♀.</i>	Madras.	T. C. Jerdon, Esq. [P.].
<i>γ. Many spec.: ♂, ♀,</i> & yg.	Malabar.	Col. Beddome [P.].
<i>δ. Several spec.: ♂, ♀,</i> & hgr.	Nilgherries.	F. Day, Esq. [P.].
<i>ε. Several spec.: ♂, ♀,</i> & yg.	Nilgherries.	T. C. Jerdon, Esq. [P.]. (As typical of <i>R. nilagirica</i> .)
<i>ζ-θ. ♂ ♀.</i>	Ceylon.	Dr. Kelaart [C.].
<i>ι-κ. ♂ ♀.</i>	Ceylon.	— Barnes, Esq. [P.].
<i>λ. Many spec., hgr. &</i> <i>yg.</i>	Ceylon.	W. Ferguson, Esq. [P.].

n. Agr.

Wadelai.

Emin Pasha

dd. ♀	Hiogo, Japan	Mason
ee-f.f. ♂♀	Perak.	Gray.
gg-h.h. ♀ & hgv.	Loe (hoo I?)	Peyer.
ll-oo. ♂♀	Malacca.	Hervey.
pp-gg. Agr.	Mt. N. of Kiu Kiang.	Pratt.
rr-ss. ♂♀	Deli, Sumatra.	Moesch.
tt. ♀	Bodanayakanur, Travancore.	Serguson.
uu-xx ♂♀	Toungoo.	Oates.
yy. ♀	Ketan Pt., Che Kiang.	Walker.
zz. Agr.	Andamans.	Stoliczka (one of the types of var. <u>andamanensis</u>)
³ b. ³ ♀ & hgv.	Da-zeh Valley, Che Kiang.	Smith
³ ♀	Hang Chan, " "	Walker.
³ ♀	Mt. Benguet, N. Luzon.	Whitehead.
¹ f. ³ ♂♀	St. Helena I?	Hose.

μ . Many spec.: ♂, ♀, Ceylon.

& yg.

ν - π , ρ . ♀ & yg.

σ . ♀.

τ . ♀.

ν - ψ . ♂, ♀, & yg.

aa - cc . ♀.

Central Ceylon.

Siam.

Java.

Java.

Borneo.

G. H. K. Thwaites, Esq. [P.].

M. Mouhot [C.].

Dr. Ploem [C.].

Mrs. Lyon [P.].

L. L. Dillwyn, Esq. [P.].

20. *Rana verrucosa*. (PLATE IV. fig. 1.)

Rana verrucosa, Günth. *Proc. Zool. Soc.* 1875, p. 567.

Vomerine teeth in two oblique series between the choanæ. Head moderate; snout rather pointed; interorbital space two thirds the width of the upper eyelid; tympanum distinct, two thirds the size of the eye. Fingers moderate, first extending much beyond second; toes moderate, nearly entirely webbed; subarticular tubercles of fingers and toes very prominent; inner metatarsal tubercle oval, compressed, hardly half as long as the first toe; a small, rounded, outer metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the tip of the snout. Upper parts with numerous very prominent warts and short glandular folds. Grey or brown above, darker spotted; hinder side of thighs black, white-marbled; sometimes a broad light vertebral stripe. Male with two internal vocal sacs.

Malabar.

a , b - d . Many spec.: ♂, ♀, & yg. Malabar. Col. Beddome [P.]. (Types.)

21. *Rana rufescens*.

Pyxicephalus rufescens, Jerdon, *Journ. As. Soc.* 1854, p. 534; Günth. *Rept. Brit. Ind.* p. 412.



Lower surface of foot.

Vomerine teeth in two oblique groups extending a little beyond the hinder edge of the choanæ. Head short; snout rounded; interorbital space half as broad as the upper eyelid; tympanum distinct, not quite half the size of the eye. Fingers moderate, first extending much beyond second, nearly as long as third; toes rather slender, webbed at the base; subarticular tubercles of fingers and toes moderate; inner metatarsal tubercle compressed, shovel-shaped, one

third the length of the second toe. The hind limb being carried forwards along the body, the metatarsal tubercle reaches a little beyond the tip of the snout. Skin of the upper parts with large, rounded, very prominent warts. Greyish brown above, indistinctly marbled; legs transversely barred; throat brown-spotted, with a **M**-shaped blackish patch in the male. The latter with two much developed internal subgular vocal sacs.

Malabar.

a-e, f-g. ♂, ♀, & yg.

Malabar.

Col. Beddome [P.].

22. *Rana tuberculosa*.

Pyxicephalus rugosus, *Günth. Proc. Zool. Soc.* 1864, p. 479, pl. 33. f. 1.

Vomerine teeth in two oblique groups between the choanæ. Head short; snout rounded; interorbital space narrower than the upper eyelid; tympanum distinct, two thirds the size of the eye. Fingers moderate, first extending slightly beyond second; toes moderate, one-third webbed; subarticular tubercles of fingers and toes moderate; inner metatarsal tubercle compressed, shovel-like, half as long as the second toe; no other metatarsal tubercle. The hind limb being carried forwards along the body, the metatarsal tubercle reaches beyond the tip of the snout. Skin of upper surfaces with prominent glandular folds and tubercles. Brown above, darker marbled; a light vertical spot on the loreal region, between eye and nostril; sometimes a light vertebral stripe.

W. Africa.

a-b. ♀.

Pungo Andongo.

Mr. Welwitsch [C.]. (Types.)

c. ♀.

W. Africa.

Prof. Barboza du Bocage [P.].

23. *Rana natalensis*.

Tomopterna natalensis, *Günth. Cat.* p. 129.

Pyxicephalus natalensis, *Smith, Ill. S. Afr., Rept., App.* p. 23; *Günth. Proc. Zool. Soc.* 1870, p. 401.

(*Tomopterna labrosa*, *Cope, Proc. Ac. Philad.* 1868, p. 111.
Pyxicephalus madagascariensis, *Grandid. Ann. Sc. Nat.* ser. 5, t. xv.)
 1872, a. 20, p. 9.

Vomerine teeth in two scarcely oblique groups between the choanæ. Head moderate; snout moderate; interorbital space narrower than the upper eyelid; tympanum very distinct, two thirds the size of the eye. Fingers moderate, first extending a little beyond second; toes moderate, half webbed; subarticular tubercles of fingers and toes moderate; inner metatarsal tubercle compressed, shovel-shaped, half the length of the second toe; no other metatarsal tubercle. The

Rana labiosa, Cope.
Madagascar.

♀
♀
h. Ad. thys. Mojanza, N^o. Madagascar. } Baron.
Senckentey Mus. }

~~c. g.~~ ~~Madagascar.~~ ~~Baron.~~
 d. Agr. ♀ Pretoria, Transvaal. Distant.
 c. d. Agr. vrs. De Kaap Goldfields, Transvaal.
 Rendall.

K-L^{m-o.} ♀ vrs. Port Elizabeth. Leslie.
 p. ♂ Kibraz, E. Africa Gregory.
 q. Several spec. Inland of Berbera. Port. Phil.

hind limb being carried forwards along the body, the metatarsal tubercle reaches nearly the tip of the snout. Skin smooth. Greyish brown above, dark-marbled; sides of head dark, with a vertical light spot between eye and nostril; legs cross-barred.

S. Africa; ~~Madagascar.~~

a. ♀.
b. ♀.

Natal.
~~Madagascar.~~

Sir A. Smith [P.].

24. *Rana cordofana*.

Pyxicephalus cordofanus, *Steindachn. Novara, Amph.* p. 8.

Tongue less emarginate. Lower jaw with tooth-like prominences in front. Head moderate; snout rather long; tympanum rather indistinct. Toes incompletely webbed, fourth nearly twice as long as third; inner metatarsal tubercle shovel-like, very large; a small tubercle opposite to it. Grey above, brown-marbled.

Cordofan.

25. *Rana delalandii*.

Tomopterna delalandii, *Günth. Cat.* p. 7.

Tomopterna marmorata, *Günth. l. c.*

Pyxicephalus delalandii, (*Bibr.*) *Tschudi, Batr.* p. 84; *Dum. & Bibr.* p. 445, pl. 87. fig. 1; *Smith, Ill. S. Afr., Rept., App.* p. 23; *Steindachn. Novara, Amph.* p. 8.

— *marmoratus*, *Peters, Arch. f. Naturg.* 1855, p. 56.

Vomerine teeth in two oblique groups extending a little beyond the hinder edge of the choanæ. Habit stout. Head short; snout rounded; interorbital space narrower than the upper eyelid; tympanum distinct, half the size of the eye. Fingers moderate, first extending a little beyond second; toes moderate, half webbed; sub-articular tubercles of fingers and toes moderate; inner metatarsal tubercle shovel-like, two thirds the length of the second toe; an indistinct outer metatarsal tubercle. The hind limb being carried forwards along the body, the metatarsal tubercle reaches a little beyond the eye. Skin of the upper surfaces with smooth rounded warts. Olive or brown above, often with one or three light dorsal lines; throat of the males brown. Male with an internal subgular vocal sac.

S. and E. Africa.

a. ♂.
b. Young.
c-h. ♂, ♀, & yg.
i. Young.

S. Africa.
S. Africa.
Cape of Good Hope.
Near Antolo.

Sir A. Smith [P.].

Sir A. Smith [P.].

W. T. Blanford, Esq. [P.].

26. *Rana breviceps*.

Sphærotheca strigata, *Günth. Cat.* p. 20, pl. ii. f. A.

Tomopterna delalandii, *Günth. l. c.* p. 129.

Rana breviceps, *Schneid. Hist. Amph.* i. p. 142; *Peters, Mon. Berl. Ac.* 1863, p. 76.

Pyxicephalus fodiens, *Jerdon, Journ. As. Soc.* 1854, p. 534.

— *pluvialis*, *Jerdon, l. c.*

Tomopterna strigata, *Günth. Proc. Zool. Soc.* 1860, p. 165.

Pyxicephalus breviceps, *Günth. Rept. Brit. Ind.* p. 411; *Theobald, Cat. Rept. As. Soc. Mus.* p. 80; *Anders. Proc. Zool. Soc.* 1871, p. 200.

Vomerine teeth in two oblique groups, extending a little beyond the hinder edge of the choanæ. Habit stout. Head short; snout rounded; occiput swollen; interorbital space narrower than the upper eyelid; tympanum distinct, half the size of the eye. Fingers moderate, first extending much beyond second, nearly as long as third; toes moderate, half webbed; subarticular tubercles of fingers and toes moderate; inner metatarsal tubercle shovel-shaped, nearly as long as second toe; no other metatarsal tubercle. The hind limb being carried forwards along the body, the metatarsal tubercle reaches the eye, or somewhat beyond. Skin of upper parts smooth, with some scattered tubercles. Light brown or olive above, darker marbled; often a light vertebral stripe, and sometimes another on the upperside of each flank; throat of the males blackish, that of the females generally brown-spotted. Male with two much-developed internal subgular vocal sacs.

India.

<i>a</i> Female.	Himalayas.	Messrs. v. Schlagintweit [C.].
<i>b</i> . Several spec.: ♂, ♀, & yg.	Madras.	T. C. Jerdon, Esq. } Types of
<i>c</i> . ♂ (skeleton).	Madras.	[P.] } <i>Sphæro-</i>
		T. C. Jerdon, Esq. } <i>theca</i>
		[P.] } <i>strigata</i> .
<i>d-g</i> . Young.	Malabar.	T. C. Jerdon, Esq. [P.].
<i>h-i</i> . Female.	Malabar.	Col. Beddome [P.].
<i>k</i> . Several spec., ♂ ♀.	Ceylon.	

27. *Rana dobsonii*. (PLATE III. fig. 1.)

Vomerine teeth in two oblique series between the choanæ. Habit stout. Head large; interorbital space narrower than the upper eyelid; tympanum very distinct, two thirds the size of the eye. Fingers moderate, first much longer than second, as long as third; toes webbed at the base, moderate; subarticular tubercles of fingers and toes moderate; inner metatarsal tubercle shovel-like, two thirds the length of second toe; no outer metatarsal tubercle. The hind limb being carried forwards along the body, the metatarsal tubercle reaches a little beyond the eye. Skin smooth above, granulate on the belly. Grey above, indistinctly marbled with brown; a deep black vitta along the canthus rostralis through the eye to the shoulder, expanding in a round spot on the

l. ♀ Chanda, C. India. Blanford.
n. ♀ N. Chin hills, Upper Burma. Watson.
ys. Thayetmays, Burma. "

L. 2

L. Canara.

Beddome.

tympanum; thighs black above, white-marbled; beneath yellowish, indistinctly brown-spotted on the throat. From snout to vent 54 millim.

W. India.

a. ♀. Mangalore, W. coast of India. G. E. Dobson, Esq. [P.].

28. *Rana ornata*.

Pyxicephalus ornatus, *Peters, Mon. Berl. Ac.* 1878, pl. 2. f. 7.

Vomerine teeth in two small groups between the choanæ. Habit stout. Head moderate; tympanum not much smaller than the eye, very distinct. Fingers very short, first a little shorter than second; toes very short, half webbed; metatarsal shovel obtuse. Hind limb not much longer than head and body. Upper parts smooth. Olive-green above, with three broad olive-brown bands along the back; limbs transversely barred.

Taita, E. Africa.

29. *Rana adspersa*.

Tomopterna adspersa, *Günth. Cat.* p. 7.

Pyxicephalus adspersus, (*Bibr.*) *Tschudi, Batr.* p. 84; *Dum. & Bibr.* p. 444; *Smith, Ill. S. Afr., Rept.* pl. 49; *Steindachn. Novara, Amph.* p. 7.

— *edulis*, *Peters, Arch. f. Naturg.* 1855, p. 56.



Lower surface of foot.

Vomerine teeth in two scarcely oblique groups between the choanæ; lower jaw with two large bony prominences in front. Habit very stout. Head large, generally bony, rough on the sides and above; interorbital space as broad as the upper eyelid; tympanum very distinct, two thirds or three fourths the size of the eye. Fingers short, first not extending beyond second; toes short, half webbed; inner metatarsal tubercle shovel-like, as long as the second toe; no other metatarsal tubercle; subarticular tubercles moderate. The hind limb being carried forwards along the body, the metatarsal tubercle reaches the eye. Skin warty above, with longitudinal glandular folds on the back. Olive or brown above,

sometimes with a light vertebral line; throat more or less spotted with brown. Male with a subgular vocal sac.

South and East Africa.

<i>a, b.</i> ♂ & yr.	Cape of Good Hope.	Sir A. Smith [P.].
<i>c.</i> Ad. (stuffed).	S. Africa.	Sir A. Smith [P.].
<i>d.</i> ♀.	Mossambique.	Prof. Peters. (As typical of <i>Pyxicephalus edulis</i> .)
<i>e.</i> Ad. (stuffed).	Africa.	

30. *Rana maltzanii*. = 29.

Maltzania bufonia, Boettg. *Abhandl. Senck. Ges.* xii. p. 418, pl. i. f. 3.

Closely allied to *R. adspersa*, from which it differs in the larger tympanum and the absence of longitudinal folds on the back.

In this, as in the preceding species, the tongue is less deeply emarginate than in the other members of the genus *Rana*.

Senegambia.

31. *Rana khasiana*.

Pyxicephalus khasianus, Anders. *Journ. As. Soc.* 1871, p. 23.

Vomerine prominences placed transversely behind the choanæ; lower jaw with two apophyses in front. Head moderate; occiput much swollen; tympanum half the size of the eye, faintly visible. First and second fingers nearly equal. Legs of moderate length. A small, little prominent metatarsal shovel. Uniform brown above, faintly barred on the thighs; spotted with brown on the sides, chin, thorax, and under surface of the limbs.

Khasi Hills.

32. *Rana capito*.

Rana capito, Leconte, *Proc. Ac. Philad.* 1855, p. 425, pl. 5.

Vomerine teeth in two straight groups between the choanæ. Habit stout. Head large; snout moderate, subtriangular, with indistinct canthus rostralis; interorbital space narrower than the upper eyelid; tympanum very distinct, two thirds the size of the eye. Fingers moderate, first extending beyond second; toes rather short, hardly half webbed; subarticular tubercles of fingers and toes moderate; inner metatarsal tubercle small, oval, slightly compressed; a rather indistinct outer tubercle. The hind limb being carried forwards along the body, the metatarsal tubercle reaches between the eye and the tip of the snout. A rather broad, but not very prominent, glandular lateral fold. Brownish above, with small rounded dark spots close together; legs cross-barred.

Georgia.

<i>a</i> —Hgr.	N. America.	Edward Doubleday, Esq. [P.].
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f. ♂
g. i. ♀ & ygs.
h. Ys.
i. Ad.

Gambia.
Pretoria, Transvaal.
Shiré Highlands
Ugogo.

Moloney.
Distant.
Scott Elliot
"

d. 19.	Kite, Japan.	(Haltinger Exped
c-f. 19.	Japan.	Hilgendorf.
i. 19.	(Central Japan.	Anderson
h. 19.	Enoshima.	"
i. 19.	Akone.	"

33. *Rana rugosa*.*Rana rugosa*, *Günth. Cat.* p. 11.*Rana rugosa*, *Schleg. Faun. Japon., Rept.* pl. 3. f. 3, 4; *Tschudi, Batr.* p. 79; *Dum. & Bibr.* p. 368; *Hallow. Proc. Ac. Philad.* 1860, p. 499; *Martens, Preuss. Exp. O.-As.* i. p. 111; *Camerano, Atti Ac. Torino*, xiv. p. 868.

Vomerine teeth in two oblique groups between the choanæ. Head moderate; snout short, rounded; interorbital space as broad as the upper eyelid; tympanum distinct, two thirds the size of the eye. Fingers moderate, first not extending beyond second; toes moderate, incompletely webbed; subarticular tubercles of fingers and toes rather small; inner metatarsal tubercle small, oval, blunt; a small rounded one opposite to it. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the eye. Above rough with very large, elongated tubercles; beneath, granular. Brown; legs indistinctly cross-barred. (Male with external vocal vesicles.)

Japan.

a, b. ♀.
c. ♀.

Japan.
—?

Leyden Museum.
Dr. Bleeker.

34. *Rana montezumæ*.

Rana montezumæ, *Baird, Proc. Ac. Philad.* 1855, p. 61; *Girard, U.S. Mex. Bound. Surv., Rept.* p. 27, pl. 36. f. 1-6; *Brocchi, Miss. Sc. Mex., Batr.* p. 14, pl. iv. f. 2.

— *onca*, *Cope, in Yarrow, Rep. Expl. Surv. v. Zool.* p. 528, pl. 25. f. 1-3.

Vomerine teeth in two nearly straight groups between the choanæ. Habit stout. Head short, snout rounded; canthus rostralis indistinct; interorbital space two thirds the width of the upper eyelid; tympanum nearly as large as the eye. Fingers pointed, first not extending beyond second; toes broadly webbed; subarticular tubercles of fingers and toes small; a small, blunt, inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches hardly the tympanum. A narrow glandular lateral fold, sometimes quite indistinct, especially on the hinder half of the back; sides of body with small, pearl-like tubercles. Brown above, more or less distinctly speckled with grey; small, rounded, dark-brown spots on the back, transverse ones on the limbs; beneath yellowish or light brown, dotted with whitish. Male with a black external vocal vesicle on each side, behind the angle of the mouth.

Mexico.

a. ♀.
b, c, d. ♂ ♀.
e-i. ♀.

City of Mexico.
Tehuantepec.
Mexico.

Mr. Doorman [C.].

35. *Rana catesbiana*.

Rana mugiens, *Günth. Cat.* p. 15.

Rana catesbiana, *Shaw, Zool.* iii. p. 103; *Leconte, Proc. Ac. Philad.* 1855, p. 423.

— *mugiens*, *Merr. Tent.* p. 175; *Wagl. Syst.* p. 203; *Tschudi, Batr.* p. 79; *Dum. & Bibr.* p. 370.

— *pipiens*, *Harlan, Sillim. Journ.* x. p. 62, and *Journ. Ac. Philad.* v. p. 335; *Cur. R. A.*; *Holbr. N.-Amer. Herp.* iv. p. 77, pl. 18; *Dekay, N. Y. Faun.* p. 60, pl. 19. f. 48.

— *scapularis*, *Harlan, l. c.*

— *conspersa*, *Leconte, Proc. Ac. Philad.* 1855, p. 425.

Vomerine teeth in two small groups close together, between the choanæ. Head moderate; snout rounded; canthus rostralis indistinct; interorbital space either as broad as the upper eyelid or much narrower; tympanum at least as large as the eye, generally much larger, especially in males. Fingers rather pointed, first not extending beyond second; toes broadly webbed; subarticular tubercles of fingers and toes little developed; a small inner, but no outer, metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation does not reach beyond the eye. No glandular lateral fold. Brown or olive above, darker marbled; beneath immaculate, or marbled with brown. Male with two internal vocal sacs.

E. N. America.

<i>a, b.</i> Ad. (stuffed).	Delaware.	Edward Doubleday, Esq. [P.].
<i>c, d-e.</i> ♂ ♀.	N. America.	Lord Amphilhill [P.].
<i>f, g, h.</i> ♂ ♀.	N. America.	
<i>i-k, l.</i>	N. America.	College of Surgeons [P.].
<i>m.</i> Skin.	N. America.	
<i>n.</i> Skeleton.	N. America.	
<i>o.</i> ♀.	Mexico.	

36. *Rana clamata*.

Rana clamata, *Günth. Cat.* p. 14.

Rana horiconensis, *Günth. l. c.* p. 131.

Rana clamata, *Daud. Rain.* p. 54, pl. 52. f. 2, and *Rept.* viii. p. 204; *Harlan, Sillim. Journ.* x. p. 63, and *Journ. Ac. Philad.* v. p. 338; *Dum. & Bibr.* p. 373; *Peters, Mon. Berl. Ac.* 1863, p. 412.

— *clamitans*, *Merr. Tent.* p. 175; *Holbr. N.-Amer. Herp.* iv. p. 85, pl. 20.

— *fontinalis*, *Leconte, Ann. Lyc. N. Y.* i. p. 282, and *Proc. Ac. Philad.* 1835, p. 424; *Holbr. l. c.* p. 87, pl. 21; *Dekay, N. Y. Faun., Rept.* p. 61, pl. 21. f. 64 a.

— *flavoviridis*, *Harl. l. c.*, and *Med. Phys. Res.* p. 103.

— *horiconensis*, *Holbr. l. c.* p. 83, pl. 19; *Dekay, l. c.* p. 61, pl. 22. f. 62.

— *nigrescens*, *Agassiz, Lake Superior*, p. 879; *Leconte, Proc. Ac. Philad.* 1855, p. 20.

— *clamator*, *Leconte, l. c.* p. 20.

. Age. &c. Bloomington, Ind. Bollman.

h. Several. eggs. Bloomington, Ind. Bollman
i. Tadpoles.
R. ♂ New York. " Greening.

a. ♀ Canada. Lataste.
(As Rana circulosa)
b. ♂ Lucknow, Ontario. Indian Mus.

a. ♀ Rana forreri, Blgr.
Piesidis, W. Mexico. Forrer (Type)

Vomerine teeth in two small oblique groups close together, extending a little beyond the hinder edge of the choanæ. Head moderate; snout rounded, with distinct canthus rostralis; interorbital space half the width of the upper eyelid or rather more; tympanum at least as large as the eye, sometimes nearly twice as large, generally larger in males than in females. Fingers with blunt tips, first not extending beyond the second; toes not webbed to the tips; subarticular tubercles of fingers and toes moderate; a single, small metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches nearly the tip of the snout. A prominent, narrow, glandular lateral fold, at least on the front half of the back. Brown or olive above, more or less spotted or marbled with blackish; beneath, immaculate or marbled with grey. Male with two internal vocal sacs.

E. N. America.

a. ♀.	Canada.	Sir A. Smith [P.].
b. ♂.	New York.	
c. ♂.	Philadelphia.	
d. ♀.	Georgia.	
e-f, g. ♂ ♀.	N. America.	

37. *Rana septentrionalis*.

Rana septentrionalis, *Baird, Proc. Ac. Philad.* 1855, p. 51.

— *sinuata*, *Baird, l.c.*

Vomerine teeth small, between the choanæ. Habit stout. Tympanum three fourths the size of the eye. Toes not quite entirely webbed. Skin porous; a broad, depressed, glandular lateral fold; a branch of same round the tympanum; beneath with scattered glandules. Above olive or brown, with lighter vermiculations, and with a few large dark blotches posteriorly; beneath immaculate.

Canada to Montana.

38. *Rana plancyi*.

~~2 *Rana trivittata*, *Hallow, Proc. Ac. Philad.* 1860, p. 505.~~

Rana plancyi, *Lataste, Le Naturaliste*, 1880, p. 210, and *Bull. Soc. Zool. Fr.* 1880, p. 64.

Vomerine teeth in two slightly oblique groups extending a little beyond the hinder edge of the choanæ. Snout a little shorter than in *R. esculenta*; tympanum as large as the eye, close to it. Fingers more slender, pointed; subarticular tubercles of fingers and toes little developed; inner metatarsal tubercle strong, compressed, rather more than half the length of the first toe. Glandular lateral fold very much developed, as broad as the upper eyelid. Greyish or olive above, uniform or with indistinct dark spots; seldom a light vertebral line; a blackish band along the hinder side of the thighs; a similar one, sometimes indistinct, along each side of the

4/

belly. Male with two internal vocal sacs. Otherwise like *R. esculenta*.

China.

<i>a.</i> Many spec., ♂ ♀.	Shanghai.	<i>R. Swinhoe</i> . [C.].
<i>b, c-d.</i> ♀ & yg.	Chusan.	
<i>e-f.</i> Yg.	Chusan.	East-India Company [P.].
<i>g-i.</i> ♀.	Ningpo.	
<i>k-l.</i> ♂ ♀.	Formosa.	
<i>m.</i> ♀.	Formosa.	<i>M. Dickson</i> , Esq. [P.].

39. *Rana esculenta*.

Rana esculenta, *Günth. Cat.* p. 12.

Rana viridis, *Rösel, Hist. Ran.* p. 53, pls. 13-16; *Linn. Faun. Suec.* p. 94; *Shaw, Zool.* iii. p. 103, pl. 31; *Dum. & Bibr.* p. 343; *Lataste, Herp. Gir.* p. 224.

— *esculenta*, *Linn. S. N.* i. p. 357; *Laur. Syn. Rept.* p. 31; *Müll. Zool. Dan. Prodr.* p. 35; *Meyer, Syn. Rept.* p. 12; *Sturm, Deutschl. Faun.* iii. Heft 1; *Donnd. Zool. Beitr.* iii. p. 55; *Daud. Rain.* p. 46, pl. 15. f. 1, and *Rept.* viii. p. 90; *Cuv. R. A.*; *Merr. Tent.* p. 176; *Eichw. Zool. Spec.* iii. p. 166; *Wagl. Syst. Amph.* p. 203; *Bonap. Faun. Ital.*; *Holandre, Faun. Moselle*, p. 220; *Schinz, Faun. Helv.* p. 143; *Tschudi, Batr.* p. 79; *Bell, Brit. Rept.* p. 110; *Massalongo, Erp. Veron.* p. 47; *Steindachn. Novara, Amph.* p. 16; *Koch, Ber. Senck. Ges.* 1872, p. 135; *Fatio, Vert. Suisse*, iii. p. 312; *De Betta, Faun. Ital., Rett. Anf.* p. 63; *Boettger, Abh. Senck. Ges.* 1874, p. 165; *Schreiber, Herp. Eur.* p. 177; *Leydig, An. Batr.* p. 104; *Lessona, Atti Ac. Lincei, Mem. Cl. Sc.-fis.* i. p. 1050, pl. 1.

— *ridibunda*, *Pallas, Iter.*

— *maritima*, *Risso, Hist. Nat. Eur. mér.* iii. p. 92; *Bonap. l. c.*; *Girard, U. S. Expl. Exped., Herp.* p. 25, pl. 2. f. 7-12.

— *hispanica*, *Michah. Isis*, 1830, p. 100; *Bonap. l. c.*

— *calcarata*, *Michah. l. c.*; *Tschudi, l. c.* p. 80, pl. 1. f. 1.

— *cachinans*, *Pallas, Zoogr. Ross.-As.* iii. p. 7, pl. 1; *Eichw. Zool. Casp. Cauc.* p. 136, pl. 30.

— *caucasica*, *Fall. l. c.*

— *dentex*, *Krynicky, Bull. Mosc.* iii. p. 63, pl. ii.

— *tigrina*, *Eichw. l. c.*

Pelophylax esculentus, *Fitzing. Syst. Rept.* i. p. 31.

— *hispanicus*, *Fitzing. Sitz. Ac. Wien*, xlii. p. 414.

Vomerine teeth in two slightly oblique groups between the choanæ. Head moderate; snout rounded or subacuminate; interorbital space much narrower than the upper eyelid; tympanum distinct, about two thirds the size of the eye. Fingers moderate, first extending a little beyond second; toes entirely webbed; subarticular tubercles of fingers and toes well developed; inner metatarsal tubercle very variable, either blunt or compressed, shovel-shaped, much shorter than, or nearly as long as, the first toe; a small outer metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches nearly the tip of the snout. A very prominent glandular lateral fold. Upper parts more or less spotted or marbled with dark brown or black; generally three light

w. r. ♂ ♀ Taiwanfoo, S. Formosa. Taiwanfoo Mus.
 y. Da-zeh Valley, Chi Kiang. Bassett Smith
 ♀ Da-lan-saen, S. W. of Ningpo. Walker.

w. ♂ ♀ Prague (var fortis) Fried.
 v. b. Serlepinus. ♂ ♀ Baste F. Müller.
 w. ♂ ♂ Seville Secane.
 v. b. ♂ ♀ Mt. Salore, Geneva. F. Müller.
 ♂ ♀ Zofingen, Aargau " "
 n. ♂ ♀ hgr. yg. Alodice. " Science Mus.
 ♂ ♂ (into Russia. " "
 ♂ ♀ ~~Pisa~~ ~~maritima~~ " "
 ♂ ♂ S. Spain Latarte,
 ♂ ♀ hgr. St. Malo. Boulanger.
 ♂ ♀ Smyrna Liinka.
 ♂ ♀ hgr. Serra de Gerez. Gadow
 ♂ ♀ Serra Estrella "
 ♂ ♀ hgr. yg. St. Emilion "
 ♂ ♀ Oporto "
 ♂ ♀ hgr. Lintra "
 w. ♂ hgr. yg. Algarve "
 ♂ ♀ hgr. yg. Brussels Düringer
 ♂ ♀ Vienna De Betta
 ♂ ♀ yg. " "
 ♂ ♀ " "
 ♂ ♀ " "
 ♂ ♀ hgr. Trieste, Prov. Venice " "
 w. ♂ hgr. Turbat. Alschisow.
 Larva. Between Luetta & Nushiki.
 ♂ ♀ Tangiers. Vanheer.

o ⁴ -t ⁴ ♂♀	Warsaw	Wyrznieuski.
u ⁴ -x ⁴ ♂♀	"	"
y ⁴ -a ⁵ ♂♀ + hgr.	Gironde	Leataste.
b ⁵ -e ⁵ ♂♀	Comña ^{var. fereus}	Sevane.
f ⁵ -i ⁵ ♂♀ + hgr.	Offenlaeh.	Bedriaga.
k ⁵ Many specs. ♂♀ + yg.	Piedmont (var. Lessonae)	Camerano.
l ⁵ -m ⁵ ♂♀	Astrachan	St. Petersburg
n ⁵ -q ⁵ ♀ + yg.	Tschinas, Turkestan.	"
r ⁵ -u ⁵ ♂♀	Isclenowka, L. Goktscha	"
v ⁵ -x ⁵ ♂♀	Olisabethpol.	"
y ⁵ ♀	Leukoran.	"
z ⁵ -a ⁶ ♀	Suchum-Kale, Pontus	"
b ⁶ -e ⁶ yg.	L. Abzan. nr Suchum-Kale	"
f ⁶ -g ⁶ yg.	Nukus, Amu Daria	"
h ⁶ -i ⁶ ♀	W. Sarawan, Baluchistan, Mas	"
k ⁶ -l ⁶ ♀ + ...	Nice.	Bedriaga.
m ⁶ -o ⁶ ♂♀	Orusca.	"

A bb-cc. ♀ + yg.	Sinaitic Peninsula	Hart.
dd. ♀	(Beta	Linnaea
ee-ff. ♂	Foulden, Norfolk.	Amherst.
gg-n.n. ♂♀, hgr + yg.	Stow Bedon.	" (var. Lessonae)
		Walsingham.
oo-p.p. yg.	Stow Bedon (v. Lessonae)	Mason.
tt-uu. ♂♀	Paris.	Boulenger.
vv-C ³ d ³ g ³ h ³ m ³ ♂♀ + yg.	Berlin.	"
n ³ Many specs. ♂♀	" (types of R. fortis)	"
o ³ -u ³ yg.	" var. fortis)	"
v ³ -x ³ ♀	" (intermediate between, or perhaps hybrids of R. c. typica + var fortis)	Boulenger.
y ³ Many specs. ♂, hgr. + yg.	Heyt, S. M. Belgium, Blgr	"
z ³ -c ⁴ ♂♀	Düsseldorf	Kirby
d ⁴ -h ⁴ ♂♀	(Copenhagen	Lichten
i ⁴ -n ⁴ ♂♀ + yg.	Lolland.	"

- a.¹⁰ ♀ Malta. Zool. Soc.
 b.¹⁰ ♀ Cyprus. L. ilford.
 c.¹⁰ Several spec. European shore }
 ♂ ♀, hgr. & yg. of the Bosphorus } Dickson.
 d.¹⁰ i.¹⁰ ♂ ♀ Fener-bahchehi, Asiatic }
 shore of the Sea of Marmora } "
 k.¹⁰ ♀ Starnberger See, nr. Munich. Bolterstorff
 l.¹⁰ ♀ (Pollwitz, nr. Halle/S. "
 m.¹⁰ n.¹⁰ Salziger See, & Saalane, near
 Halle/S. (var. ridibunda). "
 s.¹⁰ u.¹⁰ yg. Magdeburg (var. ridibunda). "
 v.¹⁰ w.¹⁰ ♂ ♀ Upper Danube, Tras os Montes. Gadow.
 x.¹⁰ y.¹⁰ ♂ ♀ Marshes nr. the sea, mouth of R. var. Bedriaga.
 z.¹⁰ b.¹⁰ Agr. Mondorf, Luxemburg. Boulenger.
 c.¹¹ ♀ Corsica. Dollfus.
 d.¹¹ ♂ Fas, Head of Persian Gulf. Cuning.
 e.¹¹ l.¹¹ ♂ ♀ Madeira. Lütken.
 n.¹¹ o.¹¹ ♂ ♀ Naples. Monticelli.
 b.¹¹ q.¹¹ yg. Casablanca, Morocco. Senckenberg Mus.
 i.¹¹ t.¹¹ ♂ ♀ Prater, Vienna. Werner.
 u.¹¹ v.¹¹ ♀ Neusiedle S., Hungary. "
 v.¹¹ Several spec. ♂ ♀ & yg. Guernsey, S.W. of Ashkabad on
 the hills. Warsaw Mus.
 - a.¹² ♂ ♀ (v. ridibunda) Laaerberg, nr. Vienna
 Werner.
 b.¹² c.¹² Agr. & yg. Moscow. Moscow Univ.
 d.¹² e.¹² ♂ ♀ (v. ridibunda) Dagistan, Caucasus " "
 f.¹² g.¹² (") Khizir Steppes " "
 h.¹² i.¹² ♂ ♀ & yg. (") Algiers Anderson.
 j.¹² k.¹² ♂ ♀ & yg. (") Hamman Riha
 Algeria "
 l.¹² m.¹² ♀ (") Biskra. "
 n.¹² o.¹² ♂ ♀ Argenton, Indre. Parâtie.
 p.¹² q.¹² Tadpoles Algeria. Heron Royer.
 r.¹² s.¹² ♀ (v. ridibunda) Kubatlu, Karabagh
 Senckenberg Mus.

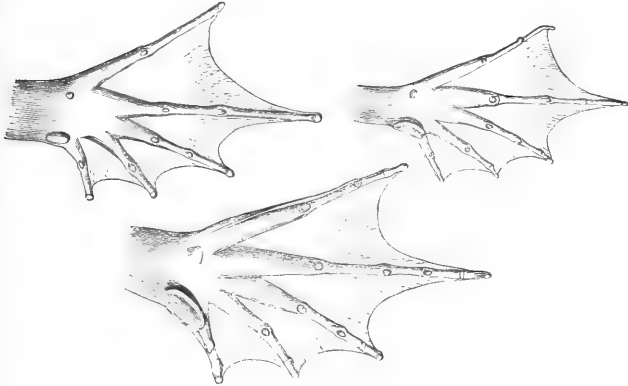
E.

- c¹³ Many larvae. (var. ridibunda) Prague. Fritsch.
 d-e¹³ ♂♀ H¹³ St. Malo. Boulenger
 f¹³ Many larvae. " " " " " " " "
 g¹³ ♂♀ Baden. Douglass.
 h¹³ ♂♀ (var. ridibunda) Zara, Dalmatia. Werner
 i¹³ Larvae (" ") Coimbra. Bedriaga
 j¹³ ♂♀ (" ") Damascus. Barrois.
 k¹³ ♂♀ (" ") Beit-Jenn, nr. Damas
 l¹³ ♂♀ (" ") Birket Atsch. Barrois
 m¹³ ♂♀ (" ") in copula, Berlin.
 n¹³ ♂♀ (" ") Heron-Royer
 o¹³ ♂ (" ") Alexandria. " "
 p¹³ ♂♀ (" ") L. Stymphalos, H. Moreau
 q¹³ Several spec. (" "), Douglass
 r¹³ ♂♀ sys. Las, Persia. Cumming
 s¹³ ♂♀ sys. (v. ridibunda) Travnik, Bosnia
 t¹³ ♂♀ (" ") Werner
 u¹³ ♂♀ (v. ridibunda). Seville. Calderon.
 v¹³ ♂ (" "). St. Maura, Ioannia Ist Werner
 w¹³ Several spec. "). Kazerun, Persia. Butcher
 x¹³ ♂♀ (" "). Kötös-Ladány, Hungary. Mihel
 y¹³ ♂♀ (v. lesona). Szamos-Ujvár, " "
 z¹³ ♂♀ sys (v. ridibunda). Madeira. 4,500-5000,
 aa¹³ ♂♀ (" ") Barings & Grant.
 bb¹³ Larvae. Freiburg, Baden. Boulenger
 cc¹³ ♂♀ (v. lesona). Berchem St. Agathe, nr. Be
 dd¹³ ♂♀ (" ") Boulenger

stripes along the back ; hinder side of thighs black-marbled. Male with an external vocal vesicle on each side, opening by a slit behind the angle of the mouth.

Europe ; W. Asia ; N.W. Africa.

Lower surface of foot.



N. Africa.

E. Asia.

C. Europe.

a-b. ♀.

c. Yg.

d. Many spec. : ♂, ♀, & yg.

e-h. ♂, ♀, & yg.

i, k-l. ♂ ♀.

m. Skin.

n-o, p-r, s-t. ♂, ♀, & larvæ.

u-v. Yg.

w. ♀.

x. Yg.

y-z. ♀ & yg.

a. Skeleton.

β-δ, ε-η. ♂, ♀, hgr., & yg.

θ. ♀.

ι. ♀.

κ. ♀ (stuffed).

λ. Skin.

μ. Skeleton.

ν. Yg.

ξ, ο. ♂ ♀.

π. ♀.

ρ-σ. ♂.

τ. ♀.

υ. ♂.

Tunis. *Tunis.*

Susa, ~~N. Africa.~~

Constantine.

Azores.

S. Europe.

Italy.

Bononia.

Turin.

Hungary.

Hanover.

N. Germany.

Paris.

Cambridgeshire.

~~Europe.~~ *Hungary.*

Europe.

Europe.

Europe.

Europe.

Albistan.

Dead Sea.

Merom.

Plains of Phœnicia.

Lake of Galilee.

Jericho.

Mr. Fraser [C.].

Mr. Fraser [C.].

P. L. Sclater, Esq. [P.].

F. D. Godman, Esq. [P.].

R. B. Webb, Esq. [P.].

J. J. Bianconi [P.].

Prof. Bonelli [P.].

Dr. J. E. Gray [P.].

W. Yarrell, Esq. [P.]. *(var. Lessonae)*

Lord A. Russell [P.].

C. G. Danford, Esq. [P.].

Rev. H. B. Tristram [C.].

Rev. H. B. Tristram [C.].

Rev. H. B. Tristram [C.].

Rev. H. B. Tristram [C.].

Dr. Anderson [P.].

ϕ . ♀.	Damascus.	Dr. Anderson [P.].
χ . Yg.	Guezama.	W. C. Trevelyan, Esq. [P.].
ψ . ♀.		Euphrates Expedition.
ω . Hgr.	Bussorah.	W. T. Blanford, Esq. [C.].
aa . ♀.	Shiraz.	W. T. Blanford, Esq. [C.].

VAR. japonica.

- Rana esculenta*, *Schleg. Faun. Japon., Rept.* p. 109, pl. 3. f. 1; *Günth. Rept. Brit. Ind.* p. 408; *Martens, Preuss. Exped. O.-As. i.* p. 111.
 — *marmorata*, *Hallow. Proc. Ac. Philad.* 1860, p. 500; *Camerano, Atti Ac. Tor.* xiv. p. 871.
 — *nigromaculata*, *Hallow. l. c.*
 ? *Hoplobatrachus reinhardti*, *Peters, Mon. Berl. Ac.* 1867, p. 711.
Rana esculenta marmorata, *Lataste, Le Naturaliste*, 1880, p. 210, and *Bull. Soc. Zool. Fr.* 1880, p. 61.

Inner metatarsal tubercle very large, shovel-shaped; interrupted narrow glandular folds along the back.

Japan, China.

$aa-\gamma\gamma$, $\delta\delta-\epsilon\epsilon$. ♂ ♀.	Japan.	Leyden Museum.
$\zeta\zeta$. Several spec.: ♂, ♀, & yg.	Chefoo.	R. Swinhoe [C.].
$\eta\eta$, $\theta\theta-\lambda\lambda$. Many spec.: ♂, ♀, & yg.	Shanghai.	R. Swinhoe [C.].
$\mu\mu$. ♀.	Chusan.	
$\nu\nu-\omega\omega$, $\pi\pi$. ♂, ♀, & yg.	Ningpo.	

40. *Rana porosa*. = *R. esculenta*.

Tomopterna porosa, *Cope, Proc. Ac. Philad.* 1868, p. 111.

Vomerine teeth in two groups between the choanæ. Head moderate; tympanum nearly as large as the eye. First finger longer than second; toes nearly completely webbed; inner metatarsal tubercle shovel-like. The hind limb being carried forwards along the body, the metatarsal tubercle reaches beyond the tip of the snout. A glandular dermal fold from above the tympanum to above groin on the side; the greatest part of the upper eyelid glandular and covered with pores. Brown above, with dark grey shades; sometimes an imperfect pale vertebral line; sides handsomely marbled with white below and grey above.

Kanagawa, Japan.

41. *Rana utricularia*.

- Rana utricularia*, *Harlan, Sillim. Journ.* x. p. 59, and *Journ. Ac. Philad.* v. p. 337.
 — *halecina*, *Hallow. Proc. Ac. Philad.* 1856, p. 141.
 — *berlandieri*, *Baird, U. S. Mex. Bound. Surv., Rept.* p. 27, pl. 36. f. 7-10.

This Frog is certainly distinct from *R. halecina*, though very closely allied to it, as, according to the authors quoted above, the

22-22.	Yg.	Bangkok, Siam.	Mason.
22.	♂	4 th Lo (Choo I st)	"
23.	♀	Broughton Bay, Corea.	"
24-25.	Yg.	Khingham Mts, Mongolia.	"
26-27	♀	Central Japan	Hudson
28.	♂	Yokohama	"
29.	♂	Hakone, Japan	"
30.	♀	Gusan, Corea.	Leech
31.	♀	Japan.	"
32-33	♀ & hgr.	Mts of Kiu Kiang.	Pratt.
34.	Ygr.	Kelan Pt, Che Kiang.	Walker
35.	Ys.	Hang Chau.	"
36.	♀	Chufu,	Reid

a-b. ♂ Pensacola, Fla. Bollman.
 c. ♂ N. America. (Christiania Mus.
 d. ♂ Duval Co., Texas. Taylor.
 (= halscina 83.4.16.1-3 male) 48.

p-r. ♂♀ Ciudad, Mexico. Torre. (= form
 s. ♀ N. America. at
 t. u. ♀ Duval Co., Texas. Taylor.
 v. ♀ Bloomington, Ind. Bollman.
 w. ♂ West Mountain Valley, Coster Co.,
 Colorado, 8000 ft. Cockerell.
 x. ♀ Hacienda de Antiquiza, Guadalupe }
 y. d' Arg. Agua Delgada. "
 c-f, g. Olarra. La Cumbre de los Arastados }
 Talpa, Jalisco, 8500 ft.

male is provided with an external vocal vesicle behind each angle of the mouth. Upper part of each flank with a well-marked row of pores, which does not exist in *R. halecina*.

United States.

42. *Rana areolata*.

Rana areolata, *Baird & Gir. Proc. Ac. Philad.* 1852, p. 173; *Baird, U. S. Mex. Bound. Surv.* pl. 36. f. 11, 12.

Appears to be closely allied to *R. halecina* and *utricularia*, but the head is larger and the spots of the back are smaller and more numerous. Male with an external vocal vesicle on each side behind the angle of the mouth.

South of North America.

43. *Rana halecina*.

Rana halecina, *Günth. Cat.* p. 13.

Rana halecina, *Kalm, Iter Amer.* iii. p. 46; *Daud. Rain.* p. 63, and *Rept.* viii. p. 122; *Merr. Tent.* p. 175; *Holbr. N.-Amer. Herp.* i. p. 89, pl. 13; *Tschudi, Batr.* p. 79; *Dum. & Bibr.* p. 352; *Dekay, N. Y. Faun., Rept.* p. 62, pl. 22. f. 60; *Cooper, U. S. Expl. Surv.* xii. part ii. pl. xxix. f. 1; *Brocchi, Miss. Sc. Mex., Batr.* p. 10.

— *virginiana*, *Laur. Syn. Rept.* p. 31.

— *pipiens*, *Gmel. S. N.* iii. p. 1052; *Donnd. Zool. Beitr.* iii. p. 51; *Schreb. Naturf.* xviii. p. 182, pl. 4; *Shaw, Zool.* iii. p. 133; *Schneid. Hist. Amph.* p. 105, pl. 32; *Lecoute, Proc. Ac. Philad.* 1855, p. 423.

— *palustris*, *Guérin, Iconogr. Rept.* pl. 26. f. 1.

— *oxyrhynchus*, *Hallow. Proc. Ac. Philad.* 1856, p. 142.

Vomerine teeth in two scarcely oblique groups between the choanæ. Head moderate; snout rather pointed; interorbital space half as broad as the upper eyelid; tympanum distinct, nearly as large as the eye. Fingers moderate, first extending beyond second; toes not quite webbed to the end; subarticular tubercles of fingers and toes well developed; inner metatarsal tubercle very small, blunt; no outer one. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches nearly the tip of the snout. A prominent, narrow, glandular lateral fold. Olive or greyish brown above, with regular oval or rounded dark-brown, light-edged spots; legs cross-barred: beneath immaculate. Male with two little-developed internal vocal sacs.

North and Central America.

a-b. Yg.

c. ♀.

d-e. ♀.

f. ♀.

g. ♀, skeleton.

Lake Winnipeg.

Canada.

United States.

N. America.

N. America.

Sir J. Richardson [P.].

Sir A. Smith [P.].

Smithsonian Institution.

Lord Amphilh.

Edward Doubleday, Esq.

[P.].

h. ♂.

i-k. ♀.

Mexico.

Coban.

l. ♀.
m-o. ♂ ♀.

Dueñas.
Lanquin, Guatemala.

O. Salvin, Esq. [C.].
O. Salvin, Esq. [C.].

44. *Rana palustris*.

Rana palustris, *Günth. Cat.* p. 14.

Rana palustris, *Leconte, Ann. Lyc. N. Y.* i. p. 282; *Harlan, Sillim. Journ.* x. p. 59, and *Journ. Ac. Philad.* v. p. 339; *Dum. & Bibr.* p. 356; *Holbr. N.-Amer. Herp.* iv. p. 95, pl. 23; *Dekay, N. Y. Faun., Rept.* p. 62, pl. 62. f. 6; *Leconte, Proc. Ac. Philad.* 1855, p. 424; *Wied, Nova Acta Ac. Leop.* xxxii. p. 114.
— *pardalis*, *Harlan, Amer. Journ.* x. p. 50.

Closely allied to *R. halecina*. Glandular lateral folds much broader and less prominent; two similar folds between them. Spots of the back subquadrangular; legs regularly barred. Male with two internal vocal sacs.

United States.

a. ♀. Philadelphia.
b-c. ♂. N. America.
d-e, f, g, h-k, l. ♂ ♀. N. America.

Sir A. Smith [P.].

45. *Rana macroglossa*.

Rana macroglossa, *Brocchi, Bull. Soc. Philom.* (7) i. p. 177, and *Miss. Sc. Mex., Batr.* p. 12, pl. iii. f. 1.

Very closely allied to, if different from, *R. halecina*. Tympanum smaller, about half the size of the eye.

Guatemala.

46. *Rana maculata*.

Rana maculata, *Brocchi, Bull. Soc. Philom.* (7) i. p. 178, and *Miss. Sc. Mex., Batr.* p. 13, pl. iii. f. 2.

Differs from *R. halecina* chiefly in the first finger not being longer than second, the slight development of the subarticular tubercles of the toes, and the shorter head.

Totonicapam, Mexico.

47. *Rana lecontei*.

Rana lecontei, *Günth. Cat.* p. 15.

Rana lecontei, *Baird & Gir. Proc. Ac. Philad.* 1853, p. 301; *Brocchi, Bull. Soc. Philom.* (7) i. p. 179, and *Miss. Sc. Mex., Batr.* p. 14, pl. iv. f. 1.

Vomerine teeth in two oblique groups between the choanæ. Head much longer than broad; snout rather pointed; interorbital space narrower than the upper eyelid; tympanum somewhat more than half the size of the eye. Fingers moderate, first extending scarcely beyond second; toes not entirely webbed; subarticular tubercles of fingers and toes well developed; a single, small, oval, inner meta-

- i. ys. Ada Sta. Ferdinand, Jahies. Bulles.
 ♂ Bay View, Michigan Eigenmann.
 p. ys. Brandon, Manitoba "
 Several species, ♂ & ys. Swift Current "
 u. ♂ & Moose Jaw, Assiniboria "
 ♀ Calgary, Alberta "
 y. ys. Poplar, Montana. "
 b. ys. Westbourne, Manitoba "
 e. ♂ & ys. Caldwell Idaho. "
 h. ♂ & Betedero, Costa Rica. Underwood.

Rana boylei, Baird.

a-d. ♀ & ygs. Camp Taylor, Marin Co., Cal.
Eigenmann.

d-f. ♂ & ygs. San Diego, Cal. Eigenmann
g. ♀ La Jolla, S. Diego Co., Cal. "
h-k. ♀ & ygs. San Francisco. (Christiania.)

Rana holsti, Blgr.

a. ♀ Great Lov Choo 3? Holst. (Type)

tarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the tip of the snout, or a little beyond. A narrow glandular lateral fold. Brown above, with round dark spots; a dark temporal spot.

California; Mexico.

a-b, *c*. Hgr.

Mexico.

M. Sallé [C.].

d-e. Hgr.

Vera Cruz.

48. *Rana nigricans*.

Rana nigricans, *Hallow. Proc. Ac. Philad.* 1854, p. 96; *Bouleng. Bull. Soc. Zool. Fr.* 1880, p. 207; *Brocchi, Miss. Sc. Mex., Batr.* p. 15, pl. iv. f. 3.

♂ *Rana boylii*, *Baird, Proc. Ac. Philad.* 1855, p. 62.

Rana longipes, *Hallow. U. S. Expl. Surv.* x. 1859, iv. *Zool.* p. 20, pl. x. f. 1.

Vomerine teeth in two nearly straight oval groups between the choanæ. Head moderate; snout short, rounded; interorbital space at least as broad as the upper eyelid; tympanum distinct, two thirds the size of the eye. Fingers moderate, first extending beyond second; toes moderate, not entirely webbed; subarticular tubercles of fingers and toes moderate; inner metatarsal tubercle small, blunt; outer tubercle none, or obtuse. The hind limb being stretched forwards along the body, the tibio-tarsal articulation reaches the eye, or a little beyond. Glandular lateral folds not prominent (in the adult), much further apart than in *Rana fusca*. Dark brown above, with small darker spots; legs barred across; beneath either whitish, scarcely or not spotted, or greyish brown, vermiculated with whitish; hinder side of thighs blackish, white-marbled. Large species.

W. N. America.

a-b. ♀.

Pacific Coast of N. America.

c. Yg.

California.

49. *Rana pretiosa*.

Rana pretiosa, *Baird & Gir. Proc. Ac. Philad.* 1853, p. 378; *Baird, Proc. Ac. Philad.* 1855, p. 378; *Gir. U. S. Expl. Exped., Herp.* p. 20, pl. 2. ff. 13-18; *Cooper, U. S. Expl. Surv.* xii. part ii. p. 304; *Bouleng. Bull. Soc. Zool. Fr.* 1880, p. 208.

Vomerine teeth in two narrow oblique groups extending beyond the level of the hinder edge of the choanæ. Head moderate, rather depressed; snout moderate, rounded; interorbital space not quite so broad as the upper eyelid; tympanum two thirds the diameter of the eye, rather distant from it. Fingers rather slender, pointed, first extending beyond second; toes incompletely webbed; subarticular tubercles of fingers and toes small; inner metatarsal tubercle small, blunt; a small, conical, very prominent tubercle at the base of the fourth toe. The hind limb being carried forwards along the body, the tibio-tarsal articulation does not reach the tip of the snout. Glandular lateral fold not very prominent. Greyish brown above,

dark-spotted; a brown temporal spot: a white line from beneath the eye to the extremity of that spot; beneath spotted with grey. Male apparently without vocal sacs.

W. N. America.

a-d. ♂, ♀, & yg.

Sumas Prairies.

Lord J. Russell [P.].

50. *Rana temporaria*.

Rana temporaria, var. *platyrhinus*, *Günth. Cat.* p. 16.

Rösel, Hist. Ran. p. 1, pls. 1-8.

Rana temporaria, part., *L. Syst. Nat.* ed. 12, p. 357.

— *muta*, *Laur. Syn. Rept.* p. 30.

— *temporaria*, *Schneid. Hist. Amph.* i. p. 113; *Latr. Sal.* p. 37, and *Rept.* ii. p. 150; *Shaw, Zool.* iii. p. 97; *Daud. Rain.* p. 46, pl. 15, and *Rept.* viii. p. 94; *Merrem, Tent.* p. 175; *Penn. Brit. Zool.* iii. p. 9; *Jenyns, Brit. Vert.* p. 300; *Bonap. Faun. Ital.*; *Schinz, Faun. Helv.* p. 143; *Tschudi, Batr.* p. 79; *Bell, Brit. Rept.* p. 84; *Dum. & Bibr.* p. 359; *Köck, Ber. Senck. Ges.* 1872, p. 135; *Fatio, Vert. Suisse*, iii. p. 321; *De Betta, Faun. Ital., Rett. Anf.* p. 64; *Lessona, Atti Ac. Lincei, Mem. Cl. Sc.-fis.* i. p. 1068, pl. ii.

— *flaviventris*, *Millet, Faun. Maine et Loire*, ii. p. 663.

— *cruenta*, *Pallas, Zoogr. Ross.-As.* p. 12.

— *alpina*, *Risso, Hist. Nat. Eur. mér.* iii. p. 93; *Bonap. l.c.*

— *scotica*, *Bell, l.c.* p. 102.

— *platyrhinus*, *Steenstr. Amtl. Ber.* 24. *Vers. Kiel*, p. 131.

— *fusca*, *De l'Isle, Ann. Sc. Nat.* ser. 5, xvii. 1873; *Leydig, An. Batr.* p. 116; *Bouleng. Bull. Soc. Zool. France*, 1879, p. 164; *Héron Royer, Bull. Ac. Belg.* (3) i. no. 2, p. 139.

— *temporaria*, var. *platyrhina*, *Schreib. Herp. Eur.* p. 125.

— *dybowskii*, *Günth. Ann. & Mag. N. H.* 1876, xvii. p. 387.

Vomerine teeth in two small oblique groups extending beyond the hinder edge of the choanæ. Head moderate; snout short, blunt; interorbital space as broad as the upper eyelid; tympanum distinct, two thirds the diameter of the eye. Fingers moderate, first extending beyond second; toes at least two-thirds webbed; subarticular tubercles of fingers and toes moderate; inner metatarsal tubercle small, obtuse; outer tubercle none or scarcely distinct. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches hardly the tip of the snout. A moderately prominent glandular lateral fold. Upper parts greyish or brown, more or less spotted with dark brown or black; a more or less intense dark temporal spot; a light line from below the eye to the extremity of the temporal spot; sides of body largely spotted; limbs transversely barred; beneath more or less spotted. Male with two internal vocal sacs.

Europe; Northern and Temperate Asia.

a. Many spec.: ♂, ♀, & yg. Scotland.

b, c. Skeletons. England.

d-e, ~~XX~~ ♂ ♀. England.

i, k. ♂ ♀ (stuffed). Cambridgeshire.

l-m. ♀ & yg. Surrey.

Museum Leach.

St. Petersburg. St. Petersburg Mus.
Hoyorod.
Kuku-nor.
Glen Avon, Banffshire Grant.
Cannistow, Caithness Anderson

a² ♀
b¹ yg
c² "
f² i² ♀ & yg
h² m² ♂ ♀

Leach.

Pesth



B

d' ♂. Kinlochewe, Ross-shire.

e' ♂ Matjok, Tana, E. Finmark.

~~n² n² ♂ ♀~~ Wimmerent.

Frank
Coll
Hara

-f. ♀ Kanawaski, Rocky Mts, Macoun.
 British N. America.
 Many spec., ♂ & ♀ & ygs. Banff, Alberta. Eigenmann.
 m. ♀ & ygs. Revelstoke, Brit. Col. "
 p. ♂ & ♀ Field, " "

Rana camerani, Blgr.

♂. Gilli, L. Goktscha, Armenia.
 Senckenberg Mus.
 c. Ygs. Central Karabagh Mts. E. Armenia.
 Senckenberg Mus.

B.

-w ♂ Mt. Pelsa Bellunine Alps, 2300 m. De Betta.
 ra. ♂ Mt. Tugan, " " 1635 "
 bl. ♀ Transilvania. Ridley
 c ♂ Casel. Norman.
 d-gg. ♂ & ♀ Mondorf, Luxemburg. Boulenger.
 h. Sev. ♂ & ♀ Prague. Fritsch.
 i. ♂ Lago della Crocetta, Bernina, Switzerland.
 k. ll. ♂ & ♀ 2300 m. Dollfus
 Sjælland. Copenhagen Mus.
 m. oo ♂ & ♀ Ilik, E. Turkestan. Lansdell.
 v. Several ♂ & ygs. Moscow. Moscow Univ.
 Larva. Sjælland, Denmark. Copenhagen Mus.
 -wv ♂ & ygs. Glengarriff, Co. Kerry. Scharff
 Larva. Rossazza, 3100 ft. Camerano.
 f. " Ceresole Reale, Alps, 5000 ft. "
 " Alps la Vecchia, 7000 ft. "
 ' ♂ & ♀ in copula. Paris Hérou-Royer.

a-β. ♂♀ Ossola, Italy. Camerans.
 γ. ♀ Altenahr. Kirby.
 δ Several spec. ♂♀ + hgv. Hoyet s. M., Belgium. Blgr
 ε-θ Hgv. Breslau Boulenger
 ι-λ ♂♀ Nice Bedriaga
 μ-ξ π♀♂. Coruña (nauipalm) Leoane.
 ρ-υ. ♂♀ St. Malo. Boulenger.
 φ. Tadpoles. London "
 ο. sev. spec. ♂♀ + yg. Fondo & Tret, S. Tyrol. De Betta
 π-ρ. ♀ Monte Lessini, Prov. Verona "
 6-λ. ♀ + yg. Yesso, Japan. Anderson

Rana macrocnemis, Blgr.

a ♂ Brusa Maltzan (Type)
 b. ♂ Prigut, nr Tiflis, 4200-4300 ft. Wolterstorff
 c-d. ♂♀ W. Tiflis. Senckenberg Mus.

k. Several spec. ♂♀ + yg. Breslau. Boulenger.
 l. " " ♂♀, hgv. + yg. Berlin "
 m-n. ♂ Wendorf, nr Basle, Alsace. Müller
 o. ♂ Osterburg Wolterstorff
 p-s. yg. Magdeburg. "
 t. ♂ Schkenditz, nr Leipzig. "
 u-v. yg. Halle/S. "
 w-x. ♂♀ Sjælland. Copenhagen M.
 y-b' Tadpoles. Bred by Hérou Royer.
 c'. ♂ Karlovac, Slavonia. Fritsch.
 d' Many tadpoles Breslau. Bred by f. Born.
 e' " Halle/S. " " Wolterstorff
 f'-l' ♂♀ Szamos-Ujvar, Transylvania. Méthy
 m'-n', o. ♂♀, in copula, & ♀ Copenhagen. Hérou-Royer.

Wimerer.
Dunphail. Morayshire.
Hampton. Middlesex.
Giard.
Grant.
Bodson.
Sadpole. *Ausermann Prov. Hamur.* *Boulenger.*
Jomris valley. RANA. Hungary. 45 *Méhely.*
z y, z d, z q larva. *Bratman, Baden, 3265 ft.* *Boulenger*
n. ♀. *Exeter.* *Museum Leich.*
o. ♀. *Killarney.* *Rev. E. Eaton [P.].*
p. w. ♂, ♀, *Hanover.* *Dr. J. E. Gray [P.].*
hgr., & yg.
x-y. ♂ ♀. *Coruña.* *M. V. L. Seoane [C.] (var. *flavipal.*)*
z. ♂. *Sinus Abrek, E.* *Prof. Taczanowski [P.].*
Siberia. *(Type of *Rana dybowskii.*)*

51. *Rana arvalis.*

- Rana temporaria*, var. *oxyrhinus* et *arvalis*, part., *Günth. Cat.* p. 16.
Rana temporaria, *Linn. Faun. Suec.* i. p. 94.
 — *temporaria*, part., *L. Syst. Nat.* ed. 12, p. 357.
 — *arvalis*, *Nilsson, Skand. Faun.* iii. p. 42; *Collin, Naturh. Tidsskr.* 1870, p. 291; *Leydig, An. Batr.* p. 129; *Bouleng. Bull. Soc. Zool. France*, 1879, p. 169.
 — *oxyrhinus*, *Steenstr. Amtl. Ber.* 24. *Vers. Kiel*, p. 131; *Siebold, Arch. f. Naturg.* 1852; *Koch, Ber. Senck. Ges.* 1872, p. 135; *Fatio, Vert. Suisse*, iii. p. 345.
 — *temporaria*, var. *oxyrrhina*, *Schreib. Herp. Eur.* p. 125.

Vomerine teeth in two oblique oval groups extending beyond the hinder edge of the choanæ. Head moderate; snout rather short, pointed, prominent; interorbital space narrower than the upper eyelid; tympanum distinct, two thirds the diameter of the eye. Fingers moderate, first extending beyond second; toes at least two-thirds webbed; subarticular tubercles of fingers and toes moderate; inner metatarsal tubercle strong, compressed, more than half the length of the first toe; no outer tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation does not reach the tip of the snout. A very prominent glandular lateral fold. Coloration much as in *Rana fusca*; sometimes a light, dark-edged vertebral stripe; belly immaculate. Male with two internal vocal sacs.

East Europe; West Asia.

- a, b-d. ♂, ♀, & yg.* *Sweden.* *D. A. W.*
e. Yg. *Bohuslän. Göteborg* *Prof. Sundevall [P.].*
f. ♀. *Hanover.* *Hr. Malm [P.].*
g-h. ♀ & yg. *North Germany.* *Dr. J. E. Gray [P.].*
i. Yg. *Albistan.* *Dr. J. E. Gray [P.].*
C. G. Danford, Esq. [P.].

52. *Rana cantabrigensis.*

- Rana temporaria*, var. *silvatica*, part., *Günth. Cat.* p. 17.
Rana sylvatica, *Dekay, N. Y. Faun.* iii. p. 64, pls. 21, 22; *Bouleng. Bull. Soc. Zool. France*, 1879, p. 174.
 — *cantabrigensis*, *Baird, Proc. Ac. Philad.* 1854, p. 62; *Bouleng. Bull. Soc. Zool. France*, 1880, p. 209.

Vomerine teeth in two oval oblique groups extending beyond the level of the hinder edge of the choanæ. Head rather depressed;

♂ & ♀. in copula, Lyöv, Raab, Hungary. Méhely.
Collett.

snout rather elongate, acuminate; interorbital space narrower than the upper eyelid; tympanum hardly two thirds the diameter of the eye. Fingers moderate, first extending beyond second; toes incompletely webbed; subarticular tubercles of fingers and toes moderate; inner metatarsal tubercle rounded, rather prominent; no outer tubercle. The hind limbs as in *Rana fusca*. Glandular lateral fold rather prominent. Colour much as in *R. fusca* and *arvalis*; sometimes a light, dark-edged vertebral line. Male with two internal vocal sacs.

North America.

- | | | |
|---------------------------------|------------------|-------------------------|
| a. Hgr. ♂. | Lake Winnipeg. | Sir J. Richardson [P.]. |
| b. Several spec.,
hgr. & yg. | Great Bear Lake. | Sir J. Richardson [P.]. |
| c. ♀. | North America. | |

53. *Rana iberica*.

Rana iberica, *Bouleng. Bull. Soc. Zool. France*, 1879, p. 177.

Closely allied to *Rana fusca*. Tympanum smaller, not more than half the diameter of the eye; first finger not extending beyond second; hind limb longer, the tibio-tarsal articulation extending beyond the tip of the snout. Male without vocal sacs.

Spain, Portugal.

54. *Rana latastii*.

Rana latastei, *Bouleng. l. c.* 1879, p. 180.

Closely allied to *Rana agilis*. Tympanum smaller, scarcely two thirds the size of the eye, distant from it. Beneath spotted. Male without vocal sacs.

Milan.

55. *Rana agilis*.

Rana temporaria, var. *arvalis*, part., *Günth. Cat.* p. 16.

Rana temporaria, *Millet, Faune Maine et Loire*, ii. p. 664.

— *agilis*, *Thomas, Ann. Sc. Nat. sér. 4*, iv. p. 365, pl. 7; *Fatio, Rev. Mag. Zool.* sér. 2, xiv. p. 81, pls. 6 & 7, and *Vert. Suisse*, iii. p. 333; *De l'Isle, Ann. Sc. Nat. sér. 5*, xvii.; *De Betta, Faun. Ital., Rett. Anf.* p. 65; *Lataste, Herp. Gir.* p. 233; *Leydig, An. Batr.* p. 143; *Lessona, Atti Ac. Lincei, Mem. Cl. Sc.-fis.* i. p. 1074, pl. iii.; *Bouleng. Bull. Soc. Zool. France*, 1879, p. 183.

— *gracilis*, *Fatio, Rev. Mag. Zool.* sér. 2, xiv. p. 81.

— *temporaria*, var. *agilis*, *Schreib. Herp. Eur.* p. 125.

Vomerine teeth in two oblique oval groups extending beyond the hinder edge of the choanæ. Head depressed; snout rather elongate, subacuminate; interorbital space narrower than the upper eyelid; tympanum very nearly as large as the eye, close to it. Fingers

Rana amurensis, Blys.

. Many spec. ♂♀ Lake Kanka, E. Siberia. Fischer.
 " " " Chemulpo, Corea. "

d-e. ♀ & hgr. N. America.
 f-g. ♀ & yg. Kananaski, Rocky Mts } Macoun.
 British N. America.
 h-n. ♂♀ & yg. Banff, Alberta. Eigenmann.
 o. Hgr. Regina, Assiniboia "

a, b. Several spec. ♂♀ & yg. Serra de Gerez. Gadow.
 c. ♂♀ Coimbra. "
 yg. Murça, Tras os Montes "
 h. Larva. Coimbra Bedriaga.
 k. Portugal. Hérou-Royer.

a-b. ♂♀ Novarese. Camerano.
 c-d. ♂ Varese, Lombardy. "
 e-g. ♀ & hgr. Venice. "
 h-k. ♂♀ (Ordovado, Prov. Udine. De Betta.
 l. ♀ Monte Lessini Prov. Verona. "
 m. ♀ Padua "
 n-v. ♂♀ (Alcinaro, Prov. Verona. "
 s-t. ♂♀ Treviso "
 u-v. ♂ Florence. Florence Mus.
 w. Several spec. ♂♀ & yg. Castelfranco }
 Prov. Treviso } De Betta.
 c-f. Yg. Bertonia, nr Lodi, Lombardy "
~~Many spec.~~ Parnassos. Krüper.
 Tadpole. Bred by Hérou Royer.
 ♀ Turin. Peracca.

moderate, first extending beyond second; toes at least two-thirds webbed; subarticular tubercles of fingers and toes much developed; inner metatarsal tubercle rounded, blunt, rather strong; a small outer tubercle. A narrow glandular lateral fold. Above greyish brown, dark-spotted; a very dark temporal spot; a light line on the lip from the tip of the snout to the extremity of the temporal spot; hind limbs regularly cross-barred; beneath immaculate. Male without vocal sacs.

France, Switzerland, N. Italy, Austria, Greece.

a-b. ♂.	Paris.	M. F. Lataste [P.].
c-d. ♂ ♀.	Bononia.	Prof. J. J. Bianconi [P.].

56. *Rana silvatica*.

Rana temporaria, var. *silvatica*, part., *Günth. Cat.* p. 17.

Rana silvatica, *Leconte, Ann. Lyc. N. Y.* i. p. 232; *Harlan, Sillim. Journ.* ser. 1, x. p. 58, and *Journ. Ac. Philad.* v. part ii. p. 338; *Holbr. N.-Amer. Herp.* i. p. 95, pl. 15; *Dum. & Bibr.* p. 362; *Wied, Nova Acta Ac. Leop.* xxxvii. p. 114; *De l'Isle, Ann. Sc. Nat.* sér. 5, xvii.

— *pensylvanica*, *Harlan, Sillim. Journ.* l. c.; *Bouleng. Bull. Soc. Zool. France*, 1879, p. 188.

Very closely allied to *R. agilis*. Tympanum not quite so close to the eye. The tibio-tarsal articulation extends to the tip of the snout or somewhat beyond. According to De l'Isle, the male is provided with two internal vocal sacs.

North America.

a-c. ♀.	N. America.	Edward Doubleday, Esq. [P.].
d-e. Yg.	N. America.	Dr. J. Green [P.].
f, g-i, k-l. ♀,	N. America.	
hgr., & yg.		

57. *Rana japonica*.

Rana temporaria, var. *japonica*, *Günth. Cat.* p. 17.

Rana temporaria, *Schleg. Faun. Japon., Rept.* p. 109, pl. 3.

— *silvatica*, part., *Hallow. Proc. Ac. Philad.* 1860, p. 500; *Günth.*

Rept. Brit. Ind. p. 409; *Camerano, Atti Ac. Torino*, 1879, p. 876.

— *japonica*, *Bouleng. Bull. Soc. Zool. France*, 1879, p. 190.

Resembles very much *R. agilis* and *sylvatica*. Snout longer still; tympanum smaller than in *R. agilis*, not so close to the eye. Tibio-tarsal articulation reaching beyond the tip of the snout. No outer metatarsal tubercle. A light line from beneath the eye to the extremity of the temporal spot; belly immaculate. Male with two internal vocal sacs.

Japan, China.

a-c. ♀ & hgr.	Japan.	Leyden Museum.
d. ♀.	Szechuen.	R. Swinhoe [C.].
e. ♀.	Ningpo.	
f-g. ♀ & yg.	China.	R. Swinhoe [C.].

h-i. ♂

Yokohama. Senckenberg Mus.

k. ♂

Yesso.

l-m. ♂ ♀. Lushan Mts., nr. Kiu-Kiang.

"

58. *Rana guentheri*. (PLATE IV. fig. 2.)

Vomerine teeth in two slightly oblique series commencing close to the inner front edge of the choanæ. Head moderate, depressed; snout rather long, subacuminate, with distinct canthus rostralis; interorbital space as broad as the upper eyelid; tympanum very distinct, nearly as large as the eye. Fingers rather slender, first extending beyond second; toes moderate, rather more than two-thirds webbed; subarticular tubercles of fingers and toes well developed; inner metatarsal tubercle small, oval; a rather indistinct tubercle at the base of the fourth toe. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches nearly the tip of the snout. A moderately prominent glandular lateral fold; another from beneath the eye to the shoulder. Grey above, spotted with black on the sides; glandular lateral fold black-edged; tympanum reddish brown; hind limbs cross-barred; hinder side of thighs black and white marbled; beneath yellowish, the throat speckled with brown. From snout to vent 80 millim.

S. China.

a-b. ♀.

Amoy.

R. Swinhoe [P.].

c. Yg.

China.

59. *Rana palmipes*.

Rana palmipes, *Spic. Nov. Spec. Test. Ran.* p. 29, pl. 5. f. 1; *Peters, Mon. Berl. Ac.* 1872, p. 205, & 1873, p. 622.

— *juninensis*, *Tschudi, Faun. Per., Herp.* p. 64.

Ranula gollmeri, *Peters, Mon. Berl. Ac.* 1859, p. 402.

Rana affinis, *Peters, l. c.* p. 402, & 1871, p. 402.

— *affinis*, *Cope, Proc. Ac. Philad.* 1866, p. 130, & 1868, p. 117.

Pohlia palmipes, *Steindachn. Novara, Amph.* p. 15, pl. i. f. 5; *Günth. Zool. Rec.* iv. p. 147.

Rana vaillanti, *Brocchi, Bull. Soc. Philom.* (7) i. p. 175, and *Miss. Sc. Mex., Batr.* p. 11, pl. ii. f. 1.

Vomerine teeth in two small groups on a level with the hinder edge of the choanæ. Head moderate; snout rounded; interorbital space nearly as broad as the upper eyelid; tympanum distinct, at least two thirds the diameter of the eye. Fingers moderate, first extending slightly beyond second; toes moderate, with small terminal disks, entirely webbed; subarticular tubercles of fingers and toes not much developed; a single, small, oval, inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches generally between the eye and the tip of the snout. A moderately prominent glandular lateral fold; another glandular fold from beneath the eye to the shoulder. Olive or brown above, immaculate or with small blackish spots; limbs cross-barred; hinder side of thighs black and whitish marbled; yellowish white beneath, with small brownish specks on the throat or rounded brown spots on the belly and under the thighs. Male without vocal sacs.

C. and S. America.

Rana graeca, Blgr.
Larvae eggs. Parnassos. Krüper (Types).
g. ♀ + eggs. Hills above Klimenti, N. Morea.
Douglas.

t. Ys.
♂

China. Christiania Mus.
Karin hills. Sea.

K-o. Larva. Iguarasse, Pernambuco. Rama
p.v. ♂♀ Hacienda Rosa de Jericho, Ceará.
3250 ft. Rothschild.

a. Yg.	Mexico.	M. Sallé [C.].
b. ♂.	Vera Paz.	O. Salvin, Esq. [C.].
c. ♀.	Dueñas, Guatemala.	O. Salvin, Esq. [C.].
d-e. ♂.	Lanquin, Guatemala.	O. Salvin, Esq. [C.].
f. ♀.	Pebas.	
g-h. ♀.	Canelos, Ecuador.	Mr. Buckley [C.].
i. ♀.	Sarayacu, Ecuador.	Mr. Buckley [C.].

60. *Rana copii*.

Ranula brevipalmata, Cope, *Proc. Ac. Philad.* 1874, p. 131.

Nearly allied to *Rana palmipes*, but with the web of the toes reaching only the bases of the ultimate, or, in the fourth toe, the penultimate phalange. Tympanum as large as the eye. The tibio-tarsal articulation reaches the anterior border of the orbit. Above olive; below white: femora and tibiae marbled with black behind.

Nauta, Upper Amazon.

61. *Rana nigrilatus*.

Ranula nigrilatus, Cope, *l. c.*

Allied to *Rana palmipes*. Head longer; tympanum two thirds the width of the eye; first and second fingers equal; a tarsal dermal fold; tibio-tarsal articulation reaching anterior border of orbit. Dark brown above; sides black; femora and tibiae black, marbled behind; lower surfaces closely marbled with dark brown.

Nauta.

62. *Rana chrysoprasina*.

Ranula chrysoprasina, Cope, *Proc. Ac. Philad.* 1866, p. 130.

Tryphlops chrysoprasinus, Cope, *Proc. Ac. Philad.* 1868, p. 117, and *Journ. Ac. Philad.* (n. s.) viii. 1876, p. 114, pl. 23. f. 12.

Vomerine teeth in two small convergent fasciculi behind opposite nares. Snout acuminate, projecting; tympanum two thirds the width of the eye. Toes fully and widely palmate; tips of fingers and toes slightly dilated; one minute metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches between the eye and the tip of the snout. Skin shagreened above; a glandular fold on each side. Colour brilliant lac-green, the groin and belly approaching golden; a golden band from lip to shoulder and a faint one on each side of the back; limbs above, and tarsus and forearm below, black, the femur with a few golden spots on black ground behind; head dark above; from eye to shoulder black; below pale yellowish green immaculate, except some dark shades on sternal regions.

Costa Rica.

E

-e. ♂ & ♀. Bebedero, Costa Rica. Underwood.

63. *Rana cæruleopunctata*.

Rana cæruleopunctata, *Steindachn. Verh. zool.-bot. Ges. Wien*, 1864, p. 264, pl. 15. f. 1.

Ranula cæruleopunctata, *Cope, Proc. Ac. Philad.* 1866, p. 130.

Hylarana cæruleopunctata, *Steindachn. Novara, Amph.* p. 48.

Vomerine teeth in two small groups between the choanæ. Head moderate; snout acuminate, with distinct canthus rostralis; tympanum two thirds the width of the eye. Fingers moderate, first not extending beyond second; toes two-thirds webbed; tips of fingers and toes slightly dilated; subarticular tubercles well developed; a small oval inner, and a small rounded outer metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the tip of the snout. Skin of the upper parts shagreened; a narrow glandular lateral fold; a glandular fold from the angle of the mouth to the shoulder. Above reddish brown, spotted with darker; hind limbs cross-barred; hinder side of thighs with yellow spots.

America?

64. *Rana fuscigula*.

Rana fuscigula, *Günth. Cat.* p. 18.

Rana fuscigula, *Dum. & Bibr.* p. 386; *Smith, Ill. S. Afr., Rept., App.* p. 22.

Vomerine teeth in two slightly oblique oval groups on a level with the hinder edge of the choanæ. Head moderate; snout rounded, with rather indistinct canthus rostralis; interorbital space as broad as, or nearly as broad as, the upper eyelid; tympanum distinct, two thirds the size of the eye. Fingers moderate, first not extending beyond second; toes moderate, nearly entirely webbed; subarticular tubercles of fingers and toes moderate; a single, small, oval, inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches between eye and tip of snout. Skin smooth, or with elongate warts along the back. Brown above; sometimes a light vertebral stripe; white below, with brown spots on the throat and breast. Male with two internal vocal sacs.

W. and S. Africa.

a. ♀.

West Africa.

L. Fraser [C.].

b-c. ♀.

Sierra Leone.

Sir A. Smith [P.].

d. ♀.

Cape of Good Hope.

Earl of Derby [P.].

e, f. ♂.

Cape of Good Hope.

g. ♀.

Africa.

65. *Rana angolensis*.

Rana delalandii, *Günth. Cat.* p. 19.

Rana delalandii, *Dum. & Bibr.* p. 388; *Smith, Ill. S. Afr., Rept.* pl. 77. f. 1.

— *angolensis*, *Bocage, Journ. Sc. Lisb.* 1868, p. 73.

Rana pustulosa, Blgr.

a. ♀ Ventanas, Mexico. Forer. (Type)
b-d. yg. Hda. Sta. Gertrudis, Mascota, Jalisco.
Buller.

h-m. ♂ hgr & yg. River Wellington & Cape Town.
(Challenger Exped.)
n. Many rivers " "
o. ♀ Port Elizabeth. Spencer.

Rana nyassa Gthr.

♂ Shire highland. Johnston (Type)
♀ & ygs. Zomba, Brit. E. Africa. Johnston.

Rana johnstonii, Jthr.
a-b. ♂ ♀ Ischilomo, Brit. E. Africa. Johnston
(Types)

Rana queckettii, Bly.
a. ♀ Petermaritzburg, Natal. Queckett.
(Types).

m. Several specs, ♂, ♀, eggs, larva & eggs.
Port Elizabeth. Leslie.
w-o. eggs. Pretoria, Transvaal. Distant.
p. g. ♂ ♀ Port Elizabeth, S. Africa. Spencer
x. ♀ Petermaritzburg. Queckett.

g. Apr. ♂. Durban, Natal. Christiania.

Vomerine teeth in two transverse series between the choanæ. Head moderate; snout long, pointed; interorbital space narrower than the upper eyelid; tympanum distinct, nearly as large as the eye. Fingers moderate, first not extending beyond second; toes rather slender, two-thirds webbed; subarticular tubercles of fingers and toes moderate; a single, small, oval, inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches beyond the tip of the snout. A few narrow, interrupted glandular lines along the back; no glandular fold from the eye to the shoulder. Olive above, with large black spots, transversely dilated upon the limbs; sometimes a light vertebral stripe; a black temporal spot; a white line from below the eye to the angle of the mouth; sides of body and hinder side of thighs blackish, white-marbled. Beneath immaculate or with blackish vermiculations on the throat and breast. Male with two internal vocal sacs.

W. and S. Africa.

a. ♀.	West Africa.	Prof. Barboza du Bocage [P.].
b. Yg.	Cape of Good Hope.	Sir A. Smith [P.].
c. ♀.	Cape of Good Hope.	
d. ♂.	Kaffraria.	F. P. M. Weale, Esq. [P.].
e, f. ♀ & yg.	King-Williamstown.	H. Trevelyan, Esq. [P.].
g. ♀.	Natal.	T. Ayres [C.].
i, k. ♀ & yg.	South Africa.	Sir A. Smith [P.].
l. Yg.	South Africa.	Charles Darwin, Esq. [P.].

66. *Rana oxyrhynchus*.

Rana oxyrhynchus, Günth. Cat. p. 19.

Rana oxyrhynchus, (Sundev.) Smith, Ill. S. Afr., Rept. pl. 77. f. 2.

Vomerine teeth in two straight series, their outer edge in contact with the inner front edge of the choanæ. Head moderate; snout very long, pointed; interorbital space as broad as the upper eyelid; tympanum distinct, nearly as large as the eye. Fingers moderate, first not extending beyond second; toes moderate, entirely webbed; subarticular tubercles of fingers and toes moderate; a very small inner metatarsal tubercle; no outer one. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches far beyond the tip of the snout. Six or eight narrow glandular folds along the back; a strong glandular fold from beneath the eye to the arm. Grey above, darker spotted; hinder side of thighs with black and white reticulations. Male with two external vocal vesicles opening by two slits below the lower jaw.

W. and S. Africa.

a-b. ♂.	Braganca, Angola.	Prof. Barboza du Bocage [P.].
c-d. ♀ & hgr.	Caranzigo.	Dr. Welwitsch [C.].
e. ♀.	Cape of Good Hope.	Sir A. Smith [P.].
f. ♀.	Natal.	Sir A. Smith [P.].

67. *Rana longirostris*.

Rana longirostris, *Peters, Mon. Berl. Ac.* 1870, p. 646, pl. 1. f. 5.

Very closely allied to *Rana oxyrhynchus*. Vomerine series convergent backwards; fourth toe not very much longer than third and fifth; web not emarginate; metatarsus with two tubercles, the outer one not very prominent; slits for the vocal vesicles much longer; sides of the head black.

Keta, Guinea.

68. *Rana trinodis*.

Rana trinodis, *Boettger, Abhandl. Senck. Ges.* xii. p. 114, pl. 1. f. 2.

Vomerine teeth in two slightly oblique series commencing from the inner front edge of the choanæ. Head moderate; snout long, pointed, with rather indistinct canthus rostralis; interorbital space narrower than the upper eyelid; tympanum very distinct, two thirds the diameter of the eye. Fingers moderate, first not extending beyond second; toes moderate, nearly entirely webbed; subarticular tubercles small; two oval metatarsal tubercles, the inner compressed, prominent, the outer flat; another flat tubercle below the tibio-tarsal articulation. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches between the eye and the tip of the snout. Skin with rather indistinct longitudinal folds. Olive above, spotted with blackish; a light vertebral line; hinder side of thighs with a light, black-edged stripe; limbs cross-barred. ♂ Male without external vocal sacs.

Senegambia.

a-b. ♀ & yg.

Senegambia.

M. G. A. Boulenger [P.].

69. *Rana mascareniensis*.

Rana superciliaris, *Günth. Cat.* pp. 17 & 132, pl. i. f. B.

Rana bibronii, *Günth. l. c.* p. 18.

Rana mascareniensis, *Günth. l. c.* p. 18.

Rana esculenta, *Aud. Descr. Egypte, Rept., Suppl.* i. p. 161, pl. 2. f. 11-12.

— *mascareniensis*, *Dum. & Bibr.* p. 350; *Bell, Zool. Beagle, Rept.* p. 32, pl. 16. f. 2; *Lataste, Bull. Soc. Zool. France*, 1879, p. 89; *Bouleng. eod. loc.* p. 92.

— *bibronii*, *Hallow. Proc. Ac. Philad.* 1845, p. 249; *Peters, Mon. Berl. Ac.* 1863, p. 78.

— *mossambica*, *Peters, Arch. f. Naturg.* 1854, p. 626.

— *nilotica*, *Seetzen, Reise Syr. Pal. Eg.* iii. p. 490.

— *savignyi*, *Jan, Cenni Mus. Civ. Milano*, p. 52.

— *idæ*, *Steind. Verh. zool.-bot. Ges. Wien*, 1864, p. 266, pl. 12. f. 1.

— *nigrescens*, *Steindachn. l. c.* f. 2.

— *anchietæ*, *Bocage, Proc. Zool. Soc.* 1867, p. 843.

i. Agr. & larva. Senegambia. Maltzan.
f. Loko, Niger Benue. Linnaea.
n. Yz. Kayes, Senegambia. de Guerne.

β-γ ♀	Ankafana, Zibito, D. Couan.	
δ	Several spec. ♂♀ Tamatave.	"
ε. ♂	Lamu, N. of Zanzibar.	Jackson.
ζ-η. ♂	Wadelai.	Emin Pasha.
θ-κ ♂♀	Nossi Bé.	Deyrolle.
λ-ξ. ♂♀	Madagascar.	Baron.
ο-π-ρ ♂♀	Taita, E. Africa.	Wray.
σ ρ ♀	Alexandria.	Hérou-Royer.
*6 γ.	Mombasa.	Wilson.
τ-υ. ♂♀.	Lamu I?	Gregory.
ω. ♂	N. of Bangantankgari	"
αα. ♀	Kibibi Basin.	
bb-cc. ♀	Uganda.	Scott Elliot
dd-ee. ♂♀	Shir's Highlands.	"

Rana porosissima, *Steindachn. Novara, Amph.* p. 18, pl. 1. f. 9.

— *subpunctata*, *Bocage, Journ. Sc. Lisb.* 1868, i. p. 73.

— *abyssinica*, *Peters, Sitzb. Ges. naturf. Fr. Berl.* 1881, p. 163.

Vomerine teeth in two short oblique series commencing from the inner front edge of the choanæ. Head moderate; snout pointed, variable in length; interorbital space as broad as, or rather narrower than, the upper eyelid; tympanum distinct, two thirds the width of the eye. Fingers moderate, first not extending beyond second; toes slender, two-thirds webbed; subarticular tubercles of fingers and toes moderate; a very small inner metatarsal tubercle; no outer one. Hind limb very variable in length; carried forwards along the body, the tibio-tarsal articulation reaches either the eye, or beyond the snout, or between these two points. Six or eight glandular folds along the back, the outer generally more prominent; a strong glandular fold from beneath the eye to the arm. Brown or olive above, darker spotted; sometimes a light dorsal stripe; limbs dark-banded; hinder side of thighs black, white-marbled; beneath immaculate. Male with two black external vocal vesicles opening by two slits below the lower jaw.

Africa.

<i>a-c.</i> ♂.	Barbary.	A. Newton, Esq. [P.].
<i>d.</i> Several spec., hgr.	Gambia.	Sir A. Smith [P.].
<i>e-f.</i> ♂ ♀.	Gaboon.	H. Ansell, Esq. [P.].
<i>g.</i> ♀.	Gaboon.	
<i>h.</i> ♂.	Sierra Leone.	(Type of <i>R. superciliaris</i> .)
<i>i-k.</i> ♂.	Braganca, Angola.	Prof. B. du Bocage [P.].
<i>l.</i> Hgr.	Abyssinia.	Sir A. Smith [P.].
<i>m-o.</i> ♂ ♀.	Sooroo Pass, Abyssinia.	W. Jesse, Esq. [C.].
<i>p-q.</i> ♀ & hgr.	Sooroo Pass, Abyssinia.	W. T. Blanford, Esq. [P.].
<i>r-u.</i> Hgr., ♂, & ♀.	Ain Samhar.	W. T. Blanford, Esq. [P.].
<i>v.</i> Yg.	Zanzibar.	Sir J. Kirk [C.].
<i>w-x.</i> ♂.	Seychelles.	Dr. P. Wright [P.].
<i>y.</i> ♂.	Mauritius.	Charles Darwin, Esq. [P.].
<i>z-a.</i> Yg.	Madagascar.	

70. *Rana grayi*.

Rana grayi, *Günth. Cat.* p. 18.

Rana grayi, *Smith, Ill. S. Afr., Rept.* pl. 78. f. 2.

Strongylopus grayi, *Steind. Novara, Amph.* p. 21.

Vomerine teeth in two long, scarcely oblique series, transversely on a level with the front edge of the choanæ. Head moderate; snout rather short, rounded; interorbital space narrower than the upper eyelid; tympanum distinct, half the size of the eye. Fingers rather slender, first extending slightly beyond second; toes slender, webbed at the base; subarticular tubercles of fingers and toes moderate; inner metatarsal tubercle small, oval, very prominent; no outer

tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the tip of the snout, or somewhat beyond. Skin with narrow, interrupted glandular folds along the back. Light brown above, with rounded, sometimes confluent dark brown spots; sometimes a light vertebral line or a broad unspotted zone along the middle of the back; a dark temporal spot; beneath immaculate. Male with two internal vocal sacs.

S. Africa.

<i>a-c.</i> ♀ & yg.	South Africa.	
<i>d-h.</i> ♀.	South Africa.	Sir A. Smith [P.].
<i>i-k.</i> ♀.	Cape of Good Hope.	Sir A. Smith [P.].
<i>l-m.</i> ♂.	Kaffraria.	F. P. M. Weale, Esq. [P.].

71. *Rana fasciata.*

Rana fasciata, *Günth. Cat.* p. 20.

Strongylopus fasciatus, (*Boie*) *Tschudi, Batr.* p. 79; *Steind. Novara, Amph.* p. 21.

Rana fasciata, *Dum. & Bibr.* p. 389; *Smith, Ill. S. Afr., Rept.* pl. 78. f. 1.

— *delalandii*, *Bell, Zool. Beagle, Rept.* p. 31, pl. 16. f. 1.

Strongylopus oxyrhynchus, *Fitzing. Sitzb. Ac. Wien.* xlii. p. 414.

Vomerine teeth in two long, nearly straight series, transversely on a level with the front edge of the choanæ. Head moderate; snout long, rather pointed; interorbital space as broad as the upper eyelid; tympanum distinct, half the size of the eye. Fingers slender, first not extending beyond second; toes very slender, fourth at least as long as the distance between vent and tympanum, webbed at the base; subarticular tubercles of fingers and toes moderate; inner metatarsal tubercle small, oval, little prominent; no outer tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches much beyond the tip of the snout. Skin of the back with rather indistinct longitudinal folds. Light brown above, with four or six longitudinal dark brown stripes on the back; a dark temporal spot; beneath immaculate. Male with two internal vocal sacs.

S. Africa.

<i>a.</i> ♀.	S. Africa.	C. Darwin, Esq. [P.]. (Original specimen of Prof. Bell's description and figure.)
<i>b, c.</i> Several spec.: ♂, ♀, & yg.	S. Africa.	Sir A. Smith [P.].
<i>d.</i> ♀.	Kaffraria.	F. P. M. Weale, Esq. [P.].

72. *Rana macrodactyla.*

Hylarana macrodactyla, *Günth. Cat.* p. 72, pl. ii. f. C.

Hylorana macrodactyla, *Günth. Rept. Brit. Ind.* p. 424; *Stoliczka, Proc. As. Soc.* 1872, p. 104.

n-o. ♂ Port Elizabeth. Spencer.
 b. ♂ Cape of Good Hope. Christiania Mus.
 u. ♀, Apr., 2ys. Petermaritzburg. Duckett.

♂ Port Elizabeth. Leslie.
 ♂ " Spencer.
 ♀ Shire highland. Johnston
 ♀ Petermaritzburg. Duckett.

g. ♀ Perak-Kan, Cambodia Hérou-Royer.
 Ph. i. Hgr. Hong Kong. Walker.

Luna betsideina, Bagn.
 a. betsideina spec. ♂ & ♀, Hgr. c. Betsileo L. Couan
 b-f. c. ♂ & ♀, Hgr. c. betsideina, Betsileo "
 g. ♀ c. Betsileo "

b-c. ♂ & ♀ Kakhién Hills. Lea.

Luna cacta, Bagn.
 a-c. ♂ & ♀, Hgr. & ♀, c. Betsileo L. Couan
 f-g. ♀ betsideina, Betsileo "
 h. ♀ Fianarantsoa. Major.

Vomerine teeth in two oblique series between the choanæ. Head moderate, depressed; snout long, subacuminate; interorbital space broader than the upper eyelid; tympanum very distinct, nearly as large as the eye. Fingers slender, first not extending beyond second; toes very slender, fourth about as long as the distance between vent and tympanum, half webbed; tips of fingers and toes slightly swollen; subarticular tubercles moderate; inner metatarsal tubercle very small; a small outer tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches beyond the tip of the snout. A narrow glandular lateral fold. Brown above, spotted with darker; glandular folds and a vertebral line light; beneath immaculate.

S. China; Birmah.

a-b. ♀ & hgr.
c-d. ♀ & hgr.
e. Hgr.

Hong Kong.
China.
China.

J. C. Bowering, Esq. [P.].
J. R. Reeves, Esq. [P.]. } Types.

f. ♀

Pegu.

Theobald.

73. *Rana andersonii*.

Polypedates yunnanensis, Anders. *Anat. Zool. Res. Yunnan*, p. 846, pl. 78. f. 3.

Vomerine teeth in two small groups between the choanæ. Head moderate; snout short, rounded, with rounded canthus rostralis; interorbital space a little broader than the upper eyelid; tympanum distinct, half the width of the eye. Fingers moderate, first not extending beyond second; toes moderate, nearly entirely webbed; tips of fingers and toes dilated into very small disks; subarticular tubercles rather small; a single, small, inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches beyond the tip of the snout. Flat warts on the sides of the body; a fold above the tympanum. Olive above, indistinctly spotted; limbs cross-barred; beneath immaculate. Male with two internal vocal sacs.

Yunnan.

a. ♂. Hotha Valley, Yunnan.

Dr. J. Anderson [P.]. (One of the types.)

74. *Rana beddomii*.

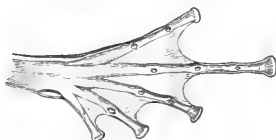
Polypedates beddomii, Günth. *Proc. Zool. Soc.* 1875, p. 571, pl. 63. f. B*.

— brachytarsus, Günth. *l. c.* p. 572.

Vomerine teeth in two slightly oblique oval groups, just behind

* In the table of measurements the length of the tarsus is indicated 11 millim.; this is a misprint for 17.

the level of the hinder edge of the choanæ. A free, pointed, conical papilla on the middle of the tongue. Head moderate, rather



Lower surface of foot.

depressed; snout obtuse, with moderate canthus rostralis; interorbital space as broad as, or somewhat narrower than, the upper eyelid; tympanum distinct, two thirds the width of the eye. Fingers moderate, first extending slightly beyond second; toes two-thirds webbed; tips of fingers and toes dilated into small disks; subarticular tubercles well developed; a single, small, oval, inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches generally beyond the tip of the snout. Skin of the back with short longitudinal glandular folds; a strong glandular fold from the eye to the shoulder; lower surfaces smooth. Light brown above, indistinctly spotted; sometimes a light vertebral stripe; a dark cross band between the eyes; a black band along the canthus rostralis and a black temporal spot; limbs more or less distinctly cross-barred; beneath immaculate. Male without vocal sac.

W. India.

<i>a, b, c-g.</i> Many spec.:	Malabar.	Col. Beddome	Types of <i>Poly-</i> <i>pedates bed-</i> <i>domii.</i>
♀, hgr., & yg.		[C.]	
<i>h-i.</i> Hgr.	Travancore.	Col. Beddome	
		[C.]	
<i>k.</i> Several spec.: ♂,	Sevagherry.	Col. Beddome	
♀, & yg.		[C.]	Types of <i>Poly-</i> <i>pedates bra-</i> <i>chyrtarsus.</i>
<i>l-n.</i> ♀.	Anamallays.	Col. Beddome	
		[C.]	
<i>o.</i> Hgr.	Anamallays.	Col. Beddome	
		[C.]	
<i>p.</i> ♀.	Sevagherry.	Col. Beddome	
		[C.]	
<i>q.</i> Several spec.	Sevagherry.	Col. Beddome	[C.]
<i>r-s.</i> Yg.	N. Canara.	T. C. Jerdon, Esq.	[P.]

75. *Rana semipalmata.* (PLATE IV. fig. 3.)

Vomerine teeth in two slightly oblique oval groups just behind the level of the hinder edge of the choanæ. Tongue with a free conical papilla in the middle. Head moderate, rather depressed; snout obtuse, with moderate canthus rostralis; interorbital space

Rana leithii, Bly.

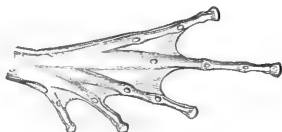
Matheran, Bombay. Leith. (Type).

v. ♀

t-u, ♀ + her Malabar, Beddome.
v. Agr. Anamallays, 4700 ft. Davison.

Rana tenasserimensis, W. Sclater.
α. ys. Tenasserim. Indian Museum.
(One of the types)

as broad as the upper eyelid; tympanum distinct, about as large as the eye. Fingers moderate, first extending a little beyond second;



Lower surface of foot.

toes half-webbed; tips of fingers and toes dilated into small disks; subarticular tubercles well developed; a single, small, oval, inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the tip of the snout. Skin of the back with short longitudinal glandular folds; lower surfaces smooth. Brown above; loreal and temporal regions blackish; a dark cross band between the eyes; limbs cross-barred; throat and breast mottled with brown. Male without vocal sac.

From snout to vent 36 millim.

This species is intermediate between *R. beddomii* and *R. leptodactyla*. It differs from both, by the much larger tympanum; from the former, by the toes, which are only half webbed; from the latter, by the length of the first finger, which is superior to that of the second, and by the more extensive web between the toes.

Malabar.

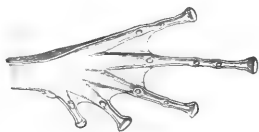
a-b. ♂ ♀.

Malabar.

Col. Beddome [C.].

76. *Rana leptodactyla*.

Polypedates brevipalmatus, Günth. *Proc. Zool. Soc.* 1875, d. 572.



Lower surface of foot.

Vomerine teeth in two slightly oblique oval groups just behind the level of the hinder edge of the choanae. Tongue with a free, pointed, conical papilla in the middle. Head moderate, rather depressed; snout blunt, with moderate canthus rostralis; inter-orbital space as broad as, or rather narrower than, the upper eyelid; tympanum distinct, half the width of the eye. Fingers moderate, first not extending as far as second; toes one-third webbed; tips of fingers and toes dilated into small disks; subarticular tubercles well developed; a small, oval, inner metatarsal tubercle. The hind

limb being carried forwards along the body, the tibio-tarsal articulation reaches the tip of the snout, or beyond, the length of the limb being very variable. Skin of the back generally with short longitudinal glandular folds; lower surfaces smooth. Olive or brownish above, mottled with darker; a more or less distinct sub-triangular dark spot between the eyes, often limited in front by a light cross band; sometimes a light vertebral stripe; a black band along the canthus rostralis, and a black temporal spot; limbs cross-barred; beneath, immaculate or spotted with brown, sometimes brown dotted with white.

S.W. India.

<i>a-b.</i> Many spec. : ♀, hgr., & yg.	Malabar.	Col. Beddome [P.].	
<i>c.</i> Several spec., ♀.	Malabar.	Col. Beddome	Types of <i>Poly-</i> <i>pedates brevi-</i> <i>palmatus.</i>
<i>d.</i> ♀.	Anamallays.	[P.]. Col. Beddome	
<i>e-g.</i> Hgr.	—?	[P.]. T. C. Jerdon, Esq. [P.].	

77. *Rana diplosticta*.

Ixalus diplostictus, Günth. *Proc. Zool. Soc.* 1875, p. 574, pl. 63. f. c.

This species is very closely allied to, and perhaps not different from, the preceding. The canthus rostralis is rather more angular and the loreal regions not quite so oblique. A black spot above the loin.

Malabar.

<i>a-d.</i> ♀ & hgr.	Malabar.	Col. Beddome [P.]. (Types.)
<i>e-f.</i> Hgr.	Malabar.	T. C. Jerdon, Esq. [P.].

78. *Rana margariana*.

Hylarana margariana, Anders. *Anat. Zool. Res. Yunnan*, p. 846, pl. 78. f. 4.

Vomerine teeth very feebly developed, in two oblique series between the choanæ. Head moderate, rather flat; canthus rostralis rounded, with the loreal region deeply concave; tympanum distinct, nearly as large as the eye. Fingers moderate, first slightly longer than second, with a rudimentary web (?); toes moderate, nearly entirely webbed; a small elongated inner metatarsal tubercle; disks of fingers very feebly developed, of toes more strongly so. A narrow glandular fold from behind the eye along the side of the body. Olive-brown above, with a dark, almost blackish band from the snout through the eye, along the sides of the groin, and a narrow pale line from below the eye to the shoulder; limbs cross-barred; throat and chest almost black from the profusion of dark-brown pustulations.

Irawaddy, Yunnan.

g. ♀ *Anaxyrus* Beldone.

a-b. *Rana phrynosoma*, Blgr.
Amphibia. Beldone.

79. *Rana elegans*. (PLATE V. fig. 1.)*Hylarana albolabris*, part., *Günth. Cat.* p. 143.

Vomerine teeth in two slightly oblique series commencing close to the inner front edge of the choanæ. Head moderate, rather depressed; snout long, pointed; interorbital space as broad as, or broader than, the upper eyelid; tympanum very distinct, nearly as large as the eye. Fingers rather long, first extending beyond second; toes moderate, nearly entirely webbed; fingers and toes with slightly swollen tips and strong subarticular tubercles; inner metatarsal tubercle small, oval; a small rounded tubercle at the base of the fourth toe. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches nearly the tip of the snout. A prominent, rather broad, glandular lateral fold; another from beneath the eye to beyond the shoulder. Reddish brown above, sides of head and body darker; a light line on the upper lip, sometimes missing; flanks and hinder side of thighs marbled with dark brown; beneath immaculate, or brown-spotted on the throat and breast. Male with a large flat gland at the base of the arm, and two much developed subgular vocal vesicles.

W. Africa.

a-b. ♂ ♀.

W. Africa.

Sir A. Smith [P.].

c. ♀.

—?

Sir J. Richardson [P.].

80. *Rana albolabris*. (PLATE V. fig. 2.)*Hylarana albolabris*, *Günth. Cat.* p. 73.*Rana albolabris*, *Hallow. Proc. Ac. Philad.* 1856, p. 153.*Limnodytes albolabris*, *A. Dum. Arch. Mus.* x. p. 226, pl. 18. f. 2.

Vomerine teeth in two small very oblique groups extending beyond the level of the hinder edge of the choanæ. Head moderate, depressed; snout long, rather pointed; interorbital space as broad as, or somewhat broader than, the upper eyelid; tympanum very distinct, nearly as large as the eye. Fingers rather long, first extending beyond second; toes moderate, nearly entirely webbed; disks of fingers and toes well developed; subarticular tubercles strong; inner metatarsal tubercle small, rounded; a rather indistinct tubercle at the base of the fourth toe. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches nearly the tip of the snout. A rather narrow glandular lateral fold; a glandular fold from beneath the eye to the shoulder. Brown above, sides of head and body darker; a white line on the upper lip; limbs cross-barred; whitish beneath, more or less spotted on the throat, breast, and limbs. Male with two internal vocal sacs, and a flat oval gland at the base of the arm.

W. Africa.

a, b. ♂.

Gaboön.

c. ♀.	Fernando Po.	Mr. Fraser [C.].
d. ♀.	Fernando Po.	Sir A. Smith [P.].
e. ♀.	Fernando Po.	

81. *Rana macularia*.

Rana malabarica, part., *Günth. Cat.* p. 11.

Hylarana malabarica, part., *Günth. l. c.* pp. 131 and 142.

Limnodytes macularius, *Blyth, Journ. As. Soc.* xxiii. p. 299.

Hylorana macularia, *Günth. Rept. Brit. Ind.* p. 425, pl. 26. f. C.

? *Hylorana leptoglossa*, *Cope, Proc. Ac. Philad.* 1863, p. 139.

Vomerine teeth in two oblique groups between the choanæ. Head moderate, depressed; snout long, subacuminate; interorbital space broader than the upper eyelid; tympanum very distinct, as large as the eye. Fingers slender, first extending beyond second; toes slender, rather more than half webbed; tips of fingers and toes slightly swollen; subarticular tubercles well developed; inner metatarsal tubercle small, oval; a rather large outer tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the tip of the snout, or nearly so far. A rather broad glandular lateral fold; a short glandular fold from beneath the eye to the shoulder, followed by a row of more or less confluent glandules, simulating a second glandular fold. Brown above, sides of head and body darker; some dark, sometimes confluent spots on the middle of the back; upper lip and lower glandular fold white; hinder side of thighs blackish- and white-marbled; beneath, immaculate or brown-spotted on the throat. Male with two not much developed external vocal sacs beneath the angle of the mouth.

Ceylon.

a. ♀.	Ceylon.	Dr. Kelaart.
b, c, d-e. ♂, ♀, & yg.	Ceylon.	

82. *Rana malabarica*.

Rana malabarica, (*Bibr.*) *Tschudi, Batr.* p. 80; *Dum. & Bibr.* p. 635, pl. 86. f. 1.

Hylorana malabarica, *Günth. Rept. Brit. Ind.* p. 426; *Stoliczka, Proc. As. Soc.* 1872, p. 105.

Vomerine teeth in two oval oblique groups between the choanæ. Head moderate, depressed; snout moderate, subacuminate; interorbital space rather narrower than the upper eyelid; tympanum very distinct, nearly as large as the eye. Fingers moderate, first extending beyond second; toes rather short, half webbed; tips of fingers and toes swollen; subarticular tubercles very strong; inner metatarsal tubercle oval, blunt; a large, rounded tubercle at the base of the fourth toe. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the eye. A broad, not very prominent glandular lateral fold; a strong glandular fold

f. i. *Ag. clava*. Banana, Congo. Hesse.

a.	♀	Loko, Niger Benue.	Linnaea.
b.	♀	Mkonumbi, E. Africa.	Gregory.
c.	♀	Niger.	Crosse.

from beneath the eye to the shoulder, followed by one or two glandules. Upper part of the head and back bright vinaceous red, sometimes with a few black specks; sides of head and body and upper part of limbs blackish brown, the latter beautifully marbled with whitish; flanks with a series of white spots, sometimes confluent; a white line on the upper lip; beneath whitish, immaculate or brown-spotted, the spots sometimes covering nearly entirely the throat and breast.

Malabar; Bombay.

a. Several spec.: ♀, hgr., & yg.
b, c-d. Hgr.

Malabar.
Matheran.

Col. Beddome [P].
Dr. Leith [P].

83. *Rana galamensis*.

Rana galamensis, Dum. & Bibr. p. 367.

Habit and proportions of *R. malabarica*. Series of vomerine teeth longer and wider apart; web between the toes shorter; sub-articular tubercles less developed; glandular lateral fold narrower and more prominent; a single metatarsal tubercle. Brown above; loreal and temporal regions black; a white line round the upper lip; another white, black-edged line along each side of the body; hinder side of thighs black- and white-marbled; throat and chest brownish grey.

Senegal.

84. *Rana curtipes*.

Rana curtipes, Jerdon, *Journ. As. Soc.* xxii. p. 532.

Pachybatrachus robustus, Mivart, *Proc. Zool. Soc.* 1868, p. 557.

Clinotarsus robustus, Mivart, *Proc. Zool. Soc.* 1869, p. 227.

Hylorana curtipes, Jerdon, *Proc. As. Soc.* 1870, p. 83.

Vomerine teeth scarcely developed, sometimes indistinct, in two slightly oblique series on a level with the hinder edge of the choanæ. Head large; snout short, rounded, with well-marked canthus rostralis; interorbital space broader than upper eyelid; tympanum distinct, as large as the eye. Fingers moderate, first extending beyond second; toes rather short, nearly entirely webbed; tips of fingers and toes swollen; subarticular tubercles much developed; inner metatarsal tubercle small, oval; a rather large, flat tubercle at the base of the fourth toe. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the eye. A moderately prominent glandular lateral fold; another behind the tympanum to the shoulder. Grey or brown above, with or without blackish dots; lateral fold margined with blackish; a blackish oblique spot below the eye; light brown beneath, the throat sometimes dark brown. Male with a subgular vocal sac.

The recently transformed young have on each side of the back,

behind the tympanum, a very distinct parotoid gland, as in *Rana alticola*. This gland generally disappears with age, though I see it quite distinct in a nearly adult female.

Canara; Malabar.

- | | | |
|-------------------|---------------|--|
| a. ♀. | North Canara. | Col. Beddome [P.]. |
| b. Many spec.: ♂, | Malabar. | Col. Beddome [P.]. |
| ♀, & yg. | | |
| c-d. ♀. | — ? | Col. Beddome [C.], T. C. Jerdon, Esq. [P.]. (As typical of <i>Rana curtipes</i> .) |
| e. ♂. | — ? | Prof. St. George Mivart [P.]. (Type of <i>Pachybatrachus robustus</i> .) |

85. *Rana alticola*.

Hylorana pipiens, Jerdon, *Proc. As. Soc.* 1870, p. 83; *Stoliczka*, *Proc. As. Soc.* 1872, p. 106.

~~♀ *Hylorana nicobaricensis*, *Stoliczka*, *Journ. As. Soc.* 1870, p. 150, pl. 9, f. 2.~~

Vomerine teeth not much developed, in two oblique series between the choanæ. Head moderate, depressed; snout rather long, more or less acuminate, with well-marked canthus rostralis; interorbital space broader than the upper eyelid; tympanum distinct, two thirds the size of the eye. Fingers rather slender, first not extending beyond second; toes moderate, nearly entirely webbed; tips of fingers and toes swollen into very distinct disks; subarticular tubercles well developed, inner metatarsal tubercle very small, scarcely prominent; a rather indistinct outer tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches a little beyond the tip of the snout. A slightly prominent, narrow glandular lateral fold; another fold from behind the tympanum to the shoulder. Light brown above, scarcely or not spotted; sides of the head and back darker; glandular folds whitish, black-margined; limbs more or less distinctly cross-barred; whitish beneath, the throat and breast sometimes nearly entirely covered with brown spots leaving a median line immaculate.

The tadpole of this species is most remarkable, being provided on each side of the front of the back with a large oval parotoid, well defined, and crowded with pores. A similar, but elongate, glandular patch is seen above the root of the tail. The head and body are rather elongate, and pass gradually into the tail, which is very thick at the base and ends in an acute point; the length of the tail is about twice that of head and body. The spiraculum is lateral, just below the middle of the left parotoid. The colour is uniform brown, lighter beneath, with a dark, light-edged ocellus on each side of the tail near its base. Recently transformed young are still provided with very distinct parotoids and the parotoid-like patch on the hind part of the back; they have not yet a glandular lateral fold.

Khasi Hills; Sikkim; Moulmein.

4. ♀. Piermerd, Travancore, 3300 ft. Ferguson.

♂ Rana lateralis, Blgr. Lea.
Rangoon, Burma.

c, d. Larva — ? East India Comp.
 e. ♂ Khasi hills. Jerdon (One of the types)
 f-g. ♀ Cherra Punji, Khasi hills. Bourne.

Rana nicobaricus, Stål.

a. ♀ Nic. Sandemann.
 b-c. ♀ Deli, Sumatra. Moesch.
 d-f. ♂♀ Salat, Java. Kirkpatrick.
 g-m. ♂♀ & hgr. Engano I., S.W. Sumatra.
 Modigliani.
 n-p. ♂♀ Burma Day
 q-r. ♂♀ Nicobar Stolietzka
 s-t. ♂♀ Bongou, N. Borneo. Everett.
 u. ♀ Sereiru, Mentawai I. Modigliani

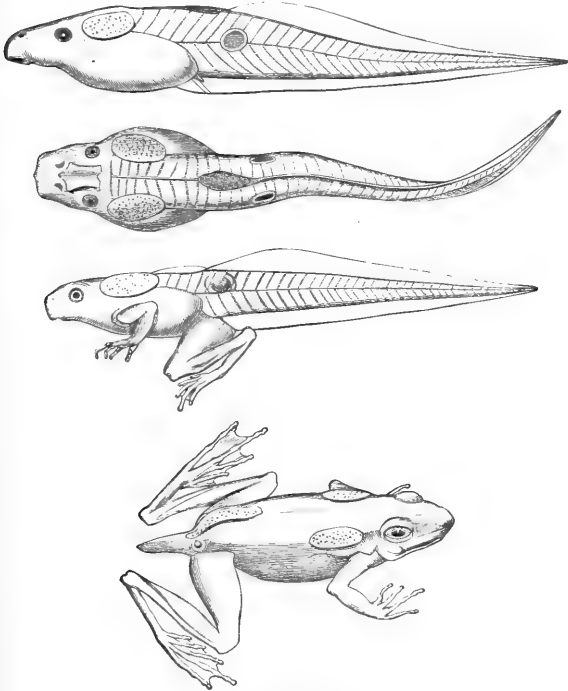
Rana monticola, Aud.

a-d. ♂ Darjeeling. Blanford.
 e. ♀ " Gamie.

Rana granulosa, Aud.

a. ♀ Sibsagar, Assam. Peal.
 b. ♀ Mt. Moolayit, 3500-6000 ft. Limbas.
 c. ♂ Karim hills. Lea.

- a. Many spec. : ♀, hgr., Shillong. T. C. Jerdon, Esq. (As typical
yg., & larvæ. of *Hylorana pipiens*.)
b. Yg. Moulmein. Prof. W. K. Parker [P.].



Rana alticola.
Larvæ.

86. *Rana temporalis*.

- Rana malabarica*, part., *Günth. Cat.* p. 11.
Hylarana malabarica, 1 art., *Günth. l.c.* pp. 131 & 142.
Hylarana malabarica, *Kelaart, Prodr. Faun. Zeyl.* i. p. 191.
? *Rana flavescens*, *Jerdon, Journ. As. Soc.* 1854, p. 531.
Hylorana temporalis, *Günth. Rept. Brit. Ind.* p. 427, pl. 26. f. G ;
and *Proc. Zool. Soc.* 1875, p. 568.
— *flavescens*, *Jerdon, Proc. As. Soc.* 1870, p. 83.

Vomerine teeth in two oblique series extending beyond the level of the hinder edge of the choanæ. Head moderate, depressed ; snout moderate, subacuminate ; loreal region strongly concave ; interor-

bital space as broad as, or rather broader than, the upper eyelid; tympanum very distinct, three fourths the size of the eye. Fingers moderate, first extending slightly beyond second; toes moderate, nearly entirely webbed; tips of fingers and toes dilated into rather large disks; subarticular tubercles well developed; inner metatarsal tubercle small, oval; a small outer metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the tip of the snout, or a little beyond. A narrow glandular lateral fold. Brown above; loreal and temporal regions, and sometimes also the sides of the body, dark brown; limbs distinctly cross-barred; throat and breast more or less speckled with brown. Male with two internal vocal sacs and an oval flat gland on the inner side of the arm.

Ceylon; S. India.

<i>a-c, d-f, g-h.</i> ♂, ♀, hgr., & yg.	Ceylon.	(Types).
<i>i-m.</i> Yg.	Ceylon.	G. H. K. Thwaites, Esq. [P.].
<i>n.</i> Yg.	Malabar.	Col. Beddome [P.].
<i>o.</i> Many spec.: ♂, ♀, hgr., & yg.	Anamallays.	Col. Beddome [P.].

87. *Rana papua*.

Rana papua, Lesson, *Coquille*, ii. i. p. 59, pl. 7. f. 1.

Limnodytes waigiensis, Dum. & Bibr. p. 514.

Hylorana dæmeli, Steind. *Sitzb. Ac. Wien*, 1868, p. 532, c. tab.

Limnodytes papuensis, Meyer, *Mon. Berl. Ac.* 1874, p. 52; *Doria*, *Ann. Mus. Civ. Gen.* vi. 1874, p. 356.

Hylarana nebulosa, Macleay, *Proc. Linn. Soc. N.S.W.* 1877, ii. p. 135.

Limnodytes papua, Peters & Doria, *Ann. Mus. Civ. Gen.* xiii. 1878, p. 418.

Very closely allied to *Rana temporalis*. Snout rather longer and more pointed; interorbital space rather narrower. Legs variable in length. Greyish above; an indistinct temporal spot; tympanum generally reddish brown; hinder side of thighs black- and white-marbled. Male with two internal vocal sacs, without humeral glands.

N. Australia; New Guinea.

<i>a-b.</i> ♀.	Cape York.	Herr Dämel [C.].
<i>c.</i> ♀.	Cape York.	
<i>d.</i> ♂.	Port Moresby.	Rev. W. T. Turner [C.].
<i>e-f.</i> ♂.	New Guinea.	
<i>g.</i> ♀.	Murray Island.	Rev. S. Macfarlane [C.].

88. *Rana krefftii*. (PLATE III. fig. 2.)

Hylarana erythræa, part., Günth. *Cat.* p. 73.

Vomerine teeth in two oval oblique groups between the choanæ.

Rana varians Bly.

Several species, ♂ & ♀ Palawan. Everett (Type)
Ys. Mt. Benguet, N. Luzon. Whitehead.

h-g. ♂, ♀ Malacca. Beddome.
v. ♀ Pinner's, Irawancu, 3300ft. Ferguson.

h. Agr. Timor Laut. Brit. Association.
i. Ys. Kapa Kapa, m. Pt. Moreoby. Loria.
h. ♀ Ferguson I., D'Entrecasteaux group. Meek.

Rana nigrovittata, Blyth.

a. ♀ Mergui. Theobald.

(One of the types)

b. ♀ Karin hills. Lea.

c-d. ♂. Slope of Byingyi Mt, 2000 ft. Oates.

c. ♀ Sta. Anna Isl. H. B. Guppy. "Lark"

d-g. ♀ & hgs. Guadalcanar. Woodford.

~~acromioclavicular~~ Burma. Day.

Rana humeralis, Blgr.

a-b. ♂ ♀. Teinjo, Upper Burma. Lea (Type)

Rana oatesii, Blgr.

a-d. ♂ ♀ & hgs. Toungoo, Burma. Oates (Types)

e. Ys. Bangkok, Siam. Greening.

Head moderate, depressed; snout a little shorter than in *R. erythræa*, subacuminate; loreal region concave; interorbital space as broad as the upper eyelid; tympanum very distinct, two thirds the size of the eye. Fingers and toes as in *R. erythræa*; a very distinct outer metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation extends slightly beyond the eye. A broad, scarcely prominent glandular lateral fold; another fold from beneath the eye to the shoulder. Chestnut-brown above, sides of head and body much darker; glandular fold not lighter than the back; hind limbs not cross-barred; the entire lower surfaces with large chestnut-brown marblings. Male with two external subgular vocal sacs. Size of *R. erythræa*.

Solomon Islands.

a. ♀.	San Christoval.	Museum of Economic Geology.
b. ♂.	Solomon Islands.	G. Krefft, Esq. [P.].

89. *Rana tytleri*.

Hylorana tytleri, *Theobald, Cat. Rept. As. Soc. Mus.* p. 84; *Stoliczka, Journ. As. Soc.* 1870, p. 148, pl. 9. f. 1.

Seems to be distinct from *R. erythræa*. Two distinct metatarsal tubercles, the inner one very prominent and large. Legs transversely barred with brown.
Birmah; Bengal.

90. *Rana erythræa*.

Hylarana erythræa, *Günth. Cat.* p. 73.

Hyla erythræa, *Schleg. Abbild.* pl. 9. f. 3.

Hylarana erythræa, *Tschudi, Batr.* p. 78; *Günth. Rept. Brit. Ind.* p. 425; *Stoliczka, Proc. As. Soc.* 1872, p. 104; *Anders. Anat. Zool. Res. Yunnan*, p. 846.

Limnodytes erythræus, *Dum. & Bibr.* p. 511, pl. 88. f. 1; *Cantor, Mal. Rept.* p. 141.

Hylorana subcærulea, *Cope, Proc. Ac. Philad.* 1868, p. 139.

Vomerine teeth in two oval oblique groups between the choanæ. Head moderate, depressed; snout rather long, subacuminate; loreal region concave; interorbital space as broad as the upper eyelid; tympanum very distinct, nearly as large as the eye. Fingers rather slender, first not extending beyond second; toes moderate, nearly entirely webbed; tips of fingers and toes dilated into small but very distinct disks; subarticular tubercles moderate; inner metatarsal tubercle small, oval; outer tubercle none or indistinct. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the tip of the snout. A rather broad and prominent glandular lateral fold; another fold from beneath the eye to the shoulder, followed by a strong glandule. Brown or olive above; upper lip and glandular folds white; hind limbs dark-speckled or longitudinally striped; beneath immaculate.

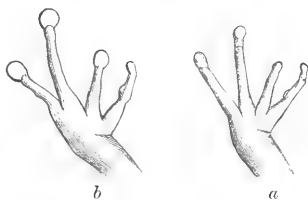
E. Indian Archipelago; Malayan Peninsula

a-b. ♀.
 c-d. ♀.
 e, f-g. ♀ & yg.
 h-i. Yg.
 k-m. Yg.
 n. Yg.

Sumatra.
 Borneo.
 Philippines.
 Pinang.
 Siam.
 E. Indies.

Leyden Museum.
 L. L. Dillwyn, Esq. [P.].

Dr. Cantor [C.].
 M. Mouhot [C.].



a. *Rana erythræa*. Upper surface of hand.
 b. — *chalconota*. do.

91. *Rana chalconota*.

Hylarana chalconota, Günth. Cat. p. 73.

Hyla chalconota, Schleg. Abbild. pl. 9. f. 1.

Polypedates chalconotus, Tschudi, Batr. p. 76.

Limnodytes chalconotus, Dum. & Bibr. p. 513.

Very closely allied to *Rana erythræa*. Skin of the back more or less glandular; disks of fingers, especially third and fourth, much larger, half the size of the tympanum; glandular folds of the same colour as the back.

Java; Borneo.

a. ♀.
 b. Hgr.
 c. ♀.

Java.
 Java.
 Matang.

Leyden Museum.
 Dr. Bleeker.

92. *Rana arfaki*.

Rana arfaki, Meyer, Mon. Berl. Ac. 1874, p. 138.

Limnodytes arfaki, Peters & Doria, Ann. Mus. Civ. Gen. 1878, p. 418, pl. 6. f. 1.

Vomerine teeth in two small groups behind the level of the hinder edge of the choanæ. Head moderate; snout rounded; inter-orbital space broader than the upper eyelid; tympanum distinct, two thirds the size of the eye. Fingers moderate; toes moderate, entirely webbed; tips of fingers and toes dilated into well-developed disks; a small, oval, inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the snout. A narrow glandular lateral fold, indistinct in old specimens. Blackish brown above, with reddish-white spots, arranged into indistinct cross bands on the limbs.

New Guinea.

o-g	♂	Nias.	Sandemann.
r-s.	♀♀	Perak.	Wray.
t.	♂	Deli, Sumatra.	Iverson.
u-v.	Ag. ♀	Sarawak.	Everett
w.	♀	Bongou, N. Borneo.	"
x.	♀	Bangkok.	Freeling.
y.	♀	Padas, N. Borneo.	Everett
z.	♀	Labuan.	"
q-β	♂ ♀	Great Natuna I.	Hose.
γ	♀	Paulo Laut, Natuna I.	"

		<u>Rana labialis</u> , Blgr.	
a.	Several spec.	Malacca.	Hervey (Type)
b.	♂	Sereim, Mentawai I.	Modigliani
c.	Ag.	Singapore	Ridley.

e.	♂	Sarawak.	Everett.
f.	Ag.	"	Brooks.

		<u>Rana hosii</u> , Blgr.	
a.	♀	Mt. Dulit, Borneo.	Hose. (Type)
b-d.	♂ ♀	Mt. Batu-Song, Sarawak, 3000 ft.	Hose
e-f	♀	Sarawak.	Everett.

Rana masonii, Blgr.

- a. ♀ N. Batavia. Mason. Type.
 b. ♂ Jengger Mts, Java. Boettger.
 c. e. Larvæ. Poata, Bantam. Janson. (see p. 89)

Rana whiteheadi, Blgr.

- a. b. ♂ ♀ Kina Baloo. Whitehead.
 c. ♂ " " Everett.
 d. e. Larvæ. Sarawak & Baram R. "
 f. " Bonyon, N. Borneo. "

- d. ♀ Mt. Dulit, Borneo. Hose.
 c. General spec. ♂ ♀ Sarawak. Everett
 e. ♀ Kariu hills. Lea
 f. g. ♀ Poata R. Sarawak. Hose.
Rana flavicrus, Blgr.

- a. ♂ Madagascar. Magaster (Ishu)
 b. ♀ " Bonnard.
 c. ♀ " Deyrolle

Rana redimita, Blgr.

- a. ♂ Madagascar. Magaster (Ishu)

- b. c. ♀ C. Betsileo L. Coum
 d. ♀ Ankafana, Betsileo "

Rana marginus, Blgr.

- a. Rio Lima, Loo Choo I? Carpenter.
 b. d. ♂ ♀ Great Loo Choo I? Holst.

93. *Rana jerboa*.

Hylorana jerboa, *Günth. Proc. Zool. Soc.* 1872, p. 599, pl. 40.

Vomerine teeth in two oblique groups between the choanæ. Head moderate; snout rather short, rounded; loreal region deeply concave; interorbital space as broad as the upper eyelid; tympanum very distinct, half the size of the eye. Fingers rather slender, first extending slightly beyond second; toes moderate, entirely webbed; disks of fingers and toes much developed; subarticular tubercles well developed; inner metatarsal tubercle small, oval; outer tubercle small or none. Hind limb extremely long, the femoro-tibial articulation reaching the tympanum. A moderately prominent glandular lateral fold. Brown above; sides of head and body darker; limbs transversely barred; yellowish beneath, more or less spotted with brown on the throat and breast.

Borneo.

a, b. ♀.

Matang.

(Types.)

madagascariensis, A. Dum.

94. *Rana (inguinalis)* (PLATE III. fig. 3.)

Rana inguinalis, *Günth. Ann. & Mag. Nat. Hist.* 1877, p. 316.

Vomerine teeth in two small oblique series extending beyond the hinder edge of the choanæ. Head moderate; snout pointed, with distinct canthus rostralis; interorbital space a little narrower than the upper eyelid; tympanum distinct, two thirds the width of the eye. Fingers rather slender, first extending beyond second; toes moderate, nearly entirely webbed; tips of fingers and toes slightly dilated; subarticular tubercles moderate; a single, very small, inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches a good deal beyond the tip of the snout. Skin smooth above; a strong fold above the tympanum; belly slightly granular. Brownish grey above, with subsymmetrical darker spots; a subtriangular spot between the eyes; a black band below the canthus rostralis and on the temporal region; a small black spot on the inguinal region; limbs cross-barred; beneath immaculate.

Madagascar.

a. Hgr.

Anzhamaru.

(Type.)

95. *Rana madagascariensis*. = *R. femoralis*.

? *Hylarana madagascariensis*, *Günth. Cat.* p. 73.

? *Limnodytes madagascariensis*, A. Dum. *Ann. Sc. Nat.* (3) xix. p. 157.

~~Vomerine teeth in two nearly straight transverse groups behind the level of the hinder edge of the choanæ. Head depressed; snout blunt, with distinct canthus rostralis and concave loreal region; interorbital space as broad as the upper eyelid; tympanum two thirds the width of the eye. Fingers rather slender, first not ex-~~

tending as far as second; toes moderate, nearly entirely webbed; tips of fingers and toes dilated into small disks; subarticular tubercles rather small; a single, small, oval, inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the tip of the snout. Skin smooth, glandular on the flanks and round the vent. Dark brown above; a black temporal spot; whitish beneath, clouded with grey; lower surface of limbs grey, white-spotted.

Madagascar.

~~a. ♀.~~

~~Madagascar.~~

96. *Rana granulata*.

Limnodytes granulatus, Boettg. Zool. Anz. 1881, p. 361.

Vomerine teeth in two suborbicular groups behind the level of the choanæ. Snout rather acute; canthus rostralis distinct; loreal region very concave; tympanum distinct, more than half the size of the eye. Fingers slender, first longer than second; toes more than two thirds webbed; tips of fingers and toes dilated into rather large disks; subarticular tubercles very prominent; a single metatarsal tubercle. The hind limb being carried forwards along the body, the heel reaches beyond the tip of the snout. Upper surfaces granulate; a fold from the eye to the shoulder; another very narrow one along each side of the back; belly glandulose. Brownish above, sides blackish; a W-shaped dark mark on the front of the back; limbs cross-barred; beneath black marbled and spotted, except on the belly.

Nossi Bé, Madagascar.

97. *Rana luctuosa*.

Limnodytes luctuosus, Peters, Mon. Berl. Ac. 1871, p. 579, and Ann. Mus. Civ. Genov. 1872, p. 43, pl. 6. f. 1.

Vomerine teeth in two small oblique groups on a level with the hinder edge of the choanæ. Head moderate; snout short, rounded, without canthus rostralis; interorbital space broader than the upper eyelid; tympanum distinct, not quite two thirds the size of the eye. Fingers rather short, first extending beyond second; toes moderate, hardly half webbed; tips of fingers slightly, of toes distinctly dilated; subarticular tubercles moderate; a single, small, oval, inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the tip of the snout. Skin quite smooth; no glandular lateral fold. Dark brown above, the sides nearly black, the limbs speckled and striped across with whitish; a narrow whitish line on each side, from the tip of the snout along the canthus rostralis, the outer edge of the upper eyelid, and the side of the back to the vent; brown beneath, more or less speckled with whitish.

Borneo.

a-b, c-f. ♀, hgr., & yg.

Matang.

g. ss. Akar R., Sarawak. Hys.

Rana ulcerosa, Boettg.

a. ♀
b-g. ♂ & ♀ & hgr. Mossi Bé. " Thinnaa.
" " Sinckenberg Mus.

Rana biporus, Blgr.

a. Several spec., ♂ & ♀ Madagascar. Majaster.
b-c. ♀ & hgr. Sentendrana. " (Type)
c. e. hgr. Madagascar. Boucard.

Rana femoralis, Blgr.

a-d. ♂ & hgr. E. Betsileo. J. Couan.
" ♀ Madagascar.
f. ♀ " Majaster.
g. ♀ Andrangoloka Peracca.
h. hgr. Lianarantsoa. Maj.
i. ♀ Ankarimasa. "

a. ♀ Mossi Bé. Sinckenberg Mus.

Rana couanii, Blgr.

a-b. ♂. Antananarivo, Betsileo. J. Couan.
c. ♂. E. Betsileo "
d-g. ♀ & ygg. Madagascar. Baron.
h. ♀ " Boucard.

Rana cavitympanum, Blgr.

a. ♂ Kina Balos, N. Borneo. Everett (Type)
b. Larva. Bongon, " " "

b.c. ♀ Thagata, Tenasserim. Fea.

98. *Rana chloronota*.

?Polypedates smaragdinus, *Blyth, Journ. As. Soc.* xxi. p. 355.

Polypedates smaragdinus, *Jerdon, Proc. As. Soc.* 1870, p. 83; *Anders. Proc. Zool. Soc.* 1871, p. 208.

— chloronotus, *Günth. Proc. Zool. Soc.* 1875, p. 569, pl. 65. f. A.

Vomerine teeth in two oblique series, commencing on a level with the hinder edge of the choanæ. Head moderate; snout short, rounded; loreal region vertical, concave; interorbital space as broad as the upper eyelid; tympanum distinct, about half the width of the eye. Fingers moderate, depressed, first extending slightly beyond second; toes moderate, broadly webbed; tips of fingers and toes dilated into large disks, that of the third finger as large as the tympanum; subarticular tubercles large; a single, oval, inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches beyond the tip of the snout. Skin smooth; a glandular fold from beneath the eye to the shoulder, followed by a glandule. Upper surface of the head and back green, generally with a few black spots; sides of head, body, and limbs dark brown, the latter barred across with blackish; glandular fold on the lip white; loins and hind part of the thighs marbled with whitish; beneath white or yellowish, the throat generally brown-speckled. Male with two external vocal vesicles below the angles of the mouth.

Himalayas.

α. Many spec., ♂ ♀.

Darjeeling.

T. C. Jerdon [P.].

(Types of *Polypedates chloronotus*.)

99. *Rana afghana*.

Polypedates afghana, *Günth. Cat.* p. 81.

Polypedates marmoratus, *Blyth, Journ. As. Soc.* 1856, p. 188;

Anderson, Proc. Zool. Soc. 1871, p. 209, and *Anat. Zool. Res.*

Yunnan, p. 842; *Stoliczka, Proc. As. Soc.* 1872, p. 108.

— afghana, *Günth. Rept. Brit. Ind.* p. 432.

Amolops afghanus, *Cope, Nat. Hist. Rev.* 1865, p. 117.

Vomerine teeth in two straight or slightly oblique series behind the choanæ. Head moderate; snout short, rounded; canthus rostralis rounded; loreal region concave; interorbital space as broad as the upper eyelid; tympanum not very distinct, hardly one third the width of the eye. Fingers depressed, first not extending quite so far as second; toes moderate, entirely webbed; tips of fingers and toes dilated into very large disks, those of the third and fourth fingers at least twice as large as the tympanum; subarticular tubercles large; inner metatarsal tubercle elongate, scarcely prominent; a very indistinct outer tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches

beyond the tip of the snout. Skin smooth above, or covered with small rounded glandules, larger on the sides of the body; a fold above the tympanum; belly granular. Above brown, variegated with greyish or grey, spotted with darker; beneath yellowish, immaculate or marbled with brown. Male with two internal vocal sacs.

The tadpole resembles that of *R. alticola* in having parotoid glands. The spiraculum is lateral, below the middle of the left parotoid. The tail is pointed and about twice as long as head and body. Uniform dark brown.

~~Afghanistan~~; Himalayas.

<i>a.</i> ♀.	(Afghanistan.)	Dr. Griffith [P.]
<i>= R. alticola.</i> (<i>b, c.</i> Many larvæ.	(Afghanistan.)	(Types of <i>Polypedates afghana</i> .)
<i>d.</i> Many spec.: ♂, ♀,	Darjeeling.	East-India Company [P.].)
hgr., & yg.		T. C. Jerdon, Esq. [P.].
<i>e, f-h.</i> ♀ & yg.	Darjeeling.	W. T. Blanford, Esq. [P.].

100. *Rana formosa*.

Polypedates formosus, *Günth. Proc. Zool. Soc.* 1875, p. 573, pl. 65. f. B.

This species is very closely allied to, and perhaps not different from, *Rana afghana*. The principal difference resides in the greater length of the fingers, that of the third equalling the distance between the tympanum and the tip of the snout. Greenish or greyish above, with rounded dark spots; legs distinctly cross-barred. Himalayas.

<i>a.</i> ♀.	Khassya.	T. C. Jerdon, Esq. [P.]
		(Type.)
<i>b, c.</i> ♂ & ♀.	Darjeeling.	W. T. Blanford, Esq. [P.].

101. *Rana celebensis*.

Limnodytes celebensis (*Schleg.*), *Peters, Mon. Berl. Ac.* 1872, p. 582.

Vomerine teeth in two oblique groups between the choanæ. Head moderate, depressed; snout subacuminate; loreal region concave; interorbital space as broad as the upper eyelid; tympanum very distinct, nearly as large as the eye, close to it. Fingers moderate, first not extending beyond second; toes moderate, nearly entirely webbed; tips of fingers and toes dilated into well-developed disks; subarticular tubercles well developed; inner metatarsal tubercle small, oval; a very distinct outer metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the tip of the snout. A very broad and very prominent glandular lateral fold; below it

i-m. ♂ & yg.	Darjeeling.	Blanford.
n-p. Larva	"	Day.
r-r. ♀ & hgr.	Thagata, Senassirim.	Sea.
s. ♀, skel.	Darjeeling.	Blanford.

Rana himalayana, Bly.

b, c. ♂ & ♀	Darjeeling.	Blanford.	Jerdon & Iles,
♀	"		

♂	Darjeeling.	Blanford.
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~~*Rana* *trifasciata* Blp.~~
 a-f. ~~Hor & young, Samarang.~~ ~~Beddome.~~
 (= *R. afghana*, Jthr.)

Rana natatrix

h-k ♂ ♀ ~~*Familaria* (Challenger Exped.~~
 l. ♀ ~~Mt. Dulit, Borneo. Hoso.~~
 m ♀ ~~Mt. Batu Song, Sarawak, 1000ft. Hoso.~~
 l. Many specs. ♂ ♀ Palawan. Everett.

Rana guttata

d' ♀ ~~Mt. Dulit, Borneo.~~ H
 e' ♀ ~~Mt. Batu Song, Sarawak, 1000ft.~~ Hoso
 f' k' ♂ ♀ ~~Kina Balos.~~ Everett

several very prominent oval glands; a glandular fold from beneath the eye to the shoulder, followed by a strong glandule. Chestnut-brown above, sides of head and body rather darker; glandular fold not lighter; legs cross-barred; hinder side of thighs brown-and-white marbled; whitish beneath, throat and chest closely speckled with brown. Male with two internal vocal sacs and an oval flat gland at the base of the arm.

Celebes.

a. ♂. —?

102. *Rana natatrix*. *Two species confounded.*

Ixalus natator, Günth. Cat. p. 75, pl. iv. f. C.

— *guttatus*, Günth. l. c. p. 76, pl. iv. f. D.

Staurois natator, Cope, Nat. Hist. Rev. 1865, p. 117.

— *guttatus*, Cope, l. c.

Polypedates guttatus, Günth. Proc. Zool. Soc. 1873, p. 600.

Vomerine teeth in two small oblique groups between the choanæ, frequently missing. Head much elongate: snout long, rounded, with angular canthus rostralis and deeply concave loreal region; interorbital space narrower than the upper eyelid; tympanum distinct, about one third the width of the eye. Fingers slender, first shorter than second, with very large disks; toes very broadly webbed, with moderate disks; subarticular tubercles rather small. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches beyond the tip of the snout. Upper surfaces more or less distinctly granular; lower surfaces smooth. Above brown, black-spotted, or dark ashy brown, uniform or with rounded whitish spots. Male with two internal vocal sacs.

Philippines; Borneo.

a, b-c. ♂.

Philippines.

(Types of *Ixalus natator*.)

d. ♂.

Dinagat Island.

Mr. Everett [C.].

e. ♂.

Borneo.

(Type of *Ixalus guttatus*.)

f. ♀.

Borneo.

g. ♀.

Matang.

Everetti

} *R. natatrix*
} *R. guttata*.

103. *Rana signata*.

Polypedates signata, Günth. Proc. Zool. Soc. 1872, p. 600, pl. 40. f. C.

Vomerine teeth in two small oval groups on a level with the hinder edge of the choanæ. Head moderate; snout subacuminate, with distinct canthus rostralis; interorbital space as broad as the upper eyelid; tympanum two thirds the width of the eye. Fingers slender, first extending a little beyond second; toes moderate, two-thirds webbed; tips of fingers and toes swollen; subarticular tubercles well developed; a small oval inner metatarsal tubercle, and a small rounded one at the base of the fourth toe. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the tip of the snout. Skin of the upper parts

granular. Blackish above; a whitish line along the upper margin of the snout and eyelid, and along each side of the back; hind limbs black and light-brown cross-barred.

Borneo.

a. Hgr. (?).

Matang.

(Type.)

104. *Rana similis*.

Polypedates similis, *Günth. Proc. Zool. Soc.* 1873, p. 171.

Has been distinguished on account of its smoother skin, and a distinct white labial band. These characters are in my opinion not sufficient to separate this form from *R. signata*, with which it agrees in every other point.

Philippines.

a. Hgr. (?).

Laguna del Bay.

Dr. A. B. Meyer [C.]
(Type.)

105. *Rana everetti*. (PLATE VI.)

Vomerine teeth in two small oblique series, commencing on a level with the hinder edge of the choanæ. Head depressed; snout rounded, with distinct canthus rostralis and concave loreal region; interorbital space as broad as the upper eyelid; tympanum three fourths the width of the eye. Fingers slender, first not extending as far as second; toes moderate, entirely webbed; tips of fingers and toes dilated into disks, those of the former large, measuring about two thirds the width of the tympanum, those of the latter smaller; subarticular tubercles well developed; a small oval inner, and an indistinct outer metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches between the eye and the tip of the snout. Skin smooth; a rather indistinct glandular fold above the tympanum; angles of the mouth glandular. Light greyish brown above, with round dark spots; limbs indistinctly cross-barred; under surface of hind limbs speckled with greyish brown.

Philippines.

a. ♀.

Zamboanga.

Mr. Everett [C.].

106. *Rana mackloti*.

Hyla mackloti, *Schleg. Nomencl. Rept. Mus. Zool. Berol.* 1856, p. 37.
Polypedates mackloti, *Peters, Mon. Berl. Ac.* 1871, p. 650.

Vomerine teeth in two converging series commencing from the inner front corner of the choanæ. Head depressed; snout short shorter than the diameter of the eye; tympanum one third the width of the eye. First finger short; toes entirely webbed; tips of fingers and toes dilated into large disks. Back with scattered

b. ♂

Akas R., Sarawak.

Arise.

b. yg.

Baratci, I. C. Bures.

Fische.

Ran. plicifera, Blgr.

a-c, d. ♂, ♀ & lar. Betsine. D. Cavan.

amphip.

a-b ♂ ♀

c. Yg.

Larchin Islands.

1 mi. 12 m. North of Osaka

Japan.

~~Japan~~

Anderson

Leech.

Ran. plicifera, Blgr.

a-d, e-g, ♂ ♀

Betsine.

D. Cavan.

b-c, d. Apr.

Malacca, S. B. Borneo.

Fischer

d. ♀

Malacca.

Tarison.

e. Apr. ♀

Mt. Batu-Sing, Sarawak, 1000 ft.

Atze.

f-i. Apr. ♂

Sarawak.

Everett

k. Apr.

Bongon, N. Borneo.

"

l-m. I & Ys.

Kina Baloo.

"

n. Ys.

Palawan.

"

o. ♀

Mt. Mulu, Borneo, 2000 ft.

Atze.

p. ♀

Singapore

Ridley

q. ♀

Sarawak.

Brooks

small tubercles; belly granular. Yellowish brown above; back and hinder side of thighs marbled with darker; a light cross band between the eyes; limbs dark cross-barred.

Java.

107. *Rana buergeri*.

Polypedates buergeri, *Günth. Cat.* p. 80.

Hyla buergeri, *Schleg. Faun. Japon.* p. 113, pl. 3. f. 7-8.

Bürgeria subversicolor, *Tschudi, Batr.* p. 75.

Polypedates buergeri, *Dum. & Bibr.* p. 521.

Vomerine teeth in a straight line on a level with the front edge of the choanæ. Head moderate; snout truncate; tympanum half the width of the eye. First finger shorter than second; toes entirely webbed; tips of fingers and toes dilated into large disks. Upper surfaces very warty; a fold above the tympanum; belly and lower surface of thighs granulate. Upper surfaces brown, marbled with black; a large triangular spot between the eyes.

Japan.

108. *Rana glandulosa*. (PLATE VII.)

Vomerine teeth in two oblique groups on a level with the hinder edge of the choanæ. Head rather large; snout rounded, with rounded canthus rostralis and concave loreal region; eyes very large; interorbital space slightly narrower than the upper eyelid; tympanum three fifths the width of the eye. Fingers moderate, first extending beyond second; toes moderate, two-thirds webbed; tips of fingers and toes swollen; subarticular tubercles very prominent: a small oval inner metatarsal tubercle, and a small rounded one at the base of the fourth toe. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the eye. Back with large flat glandules, more conspicuous on the sides; no glandular lateral fold. Dark olive-brown above, reddish brown beneath. Male with an external vocal sac on each side of the throat, and a large oval gland on the inner side of the arm.

Borneo.

a. ♂.

Sarawak.

Mr. Everett [C.].

3. RHACOPHORUS*.

Rhacophorus, *Kuhl, Isis*, 1827, p. 294; *Dum. & Bibr.* viii. p. 530; *Günth. Cat.* p. 82; *Cope, Nat. Hist. Rev.* 1865, p. 116.

* 1. *Polypedates junghuhnii*, Bleeker, *Naturk. Tijdschr. Nederl. Ind.* xi. p. 469.—Java.

2. *Polypedates lividus*, Blyth, *Journ. As. Soc.* xxiv. p. 718.—Tenasserim.

3. *Polypedates stellata*, Kelaart, *Prodr. Faun. Zeyl.* i. p. 194.—Ceylon.

Polypedates, *Tschudi, Batr.* p. 34; *Dum. & Bibr.* p. 515; *Günth. Cat.* p. 77; *Cope, l. c.*
 Boophis, *Tschudi, l. c.* p. 36.
 Bürgeria, *Tschudi, l. c.* p. 75.
 Hypsiboas, sp., *Wagler, Syst. Amph.* p. 200.

Pupil horizontal. Tongue free and deeply notched behind. Vomerine teeth. Tympanum generally distinct. Fingers and toes more or less webbed, the tips dilated into regular disks. Outer metatarsals separated by web. Omosternum and sternum with a bony style. Terminal phalanges generally bifurcate, sometimes obtuse.

East Indies; Japan; Madagascar.

The recent discovery of several remarkable forms has much affected the old division of the species into two genera, *Polypedates* and *Rhacophorus*, which was based on the development of the interdigital web. Without further entering upon this question, I may observe that two species which differ much in the extent of the web between the fingers, viz. *Polypedates schlegelii* and *Rhacophorus maximus*, resemble each other so much in all other respects that they must be considered closely allied forms. As to the arrangement proposed by Mr. Cope, viz. to place the species with undivided terminal phalanges in the genus *Ixalus*, I think that such a division would be very unnatural, as it would lead us to separate generically *R. microtympanum* from *R. pleurostictus*.

Synopsis of the Species.

I. Fingers not more than half webbed.

A. Heel without dermal appendage.

1. Vomerine teeth extending backwards beyond the level of the hinder edge of the choanæ.

Vomerine teeth in a straight line; fingers nearly one-third webbed; tympanum at least two thirds the size of the eye

1. *goudoti*, p. 76.

Vomerine teeth in two oblique groups; fingers very slightly webbed; disks as large as tympanum

3. *crossleyi*, p. 77.

Tympanum half the size of the eye; disks as large as tympanum

2. *dispar*, p. 77.

2. Vomerine teeth between the choanæ.

a. Fingers not more than one-third webbed.

α. Tympanum hidden 8. *surdus*, p. 79.

β. Tympanum distinct, more than half the width of the eye.

A glandular lateral fold 6. *hecticus*, p. 78.



- Belly quite smooth 4. *lugubris*, p. 77.
 Belly granular; nostril equally distant from
 the eye and the tip of the snout; tibio-
 tarsal articulation reaching the eye 17. *davidi*, p. 83.
 Belly granular; nostril much nearer the tip
 of the snout than the eye; tibio-tarsal ar-
 ticulation reaching the tip of the snout . . 18. *maculatus*, p. 83.

γ. Tympanum distinct, not more than half the width of
 the eye.

* Nostril equally distant from the eye and the tip of
 the snout.

- Fingers scarcely webbed; hinder side of thighs
 coloured 9. *microtympanum*,
 [p. 79.
 Fingers very distinctly webbed; hinder side
 of thighs not coloured 12. *jerdonii*, p. 80.
 Fingers very distinctly webbed; hinder side
 of thighs brown, speckled with white . . . 10. *pleurostictus*,
 [p. 79.
 Tongue with a conical papilla 13. *dubius*, p. 81.

** Nostril nearer the tip of the snout than the eye.

- Belly with very large glandules 5. *tephracomystax*,
 [p. 78.
 Tympanum half the width of the eye; tongue
 with a conical papilla 11. *reticulatus*, p. 80.
 Tympanum one third the width of the eye;
 tongue with a conical papilla 14. *nanus*, p. 81.
 Tympanum one third the width of the eye;
 tongue without papilla 7. *stictomerus*,
 [p. 78.
 Underside of tarsus tubercular 15. *fergusonii*, p. 82.
 Outer edge of forearm and tarsus with a
 denticulate fringe 16. *cavirostris*, p. 82.

b. Fingers half webbed, or nearly so.

- Tibio-tarsal articulation reaching hardly the
 eye 23. *schlegelii*, p. 86.
 Tibio-tarsal articulation reaching in front of
 the eye 24. *microglossus*,
 [p. 87.

B. Heel with a dermal appendage.

- Fingers very slightly webbed; snout not twice
 as long as the diameter of the eye 19. *eques*, p. 85.
 Fingers very slightly webbed; snout twice as
 long as the diameter of the eye 20. *nasutus*, p. 85.
 Fingers one-third webbed; canthus rostralis
 rounded 21. *appendiculatus*,
 [p. 83.

II. Fingers two-thirds webbed 25. *dennysii*, p. 87.

III. Fingers entirely webbed.

A. Vomerine teeth in two widely-separated small round groups close to the choanæ.

No dermal appendages 22. *tuberculatus*,
[p. 86.

B. Vomerine teeth in two series on a level with the front edges of the choanæ.

1. No dermal appendages.

Purple or bluish green above, immaculate . . 26. *maximus*, p. 88.

2. Heel with a dermal appendage.

Large black spots between the fingers and toes
and behind the arm 27. *reinwardtii*, [p. 88.

No spots at all 28. *malabaricus*,

One or two black spots behind the arm, none
between the fingers and toes 29. *bimaculatus*, [p. 90.

Hind limbs cross-barred 30. *pardalis*, [p. 90.
p. 91.

C. Vomerine teeth in two series behind the level of the choanæ.

A large triangular dermal appendage on the
elbow and on the heel 31. *madagascariensis*, p. 91.

1. *Rhacophorus goudoti*.

Polypedates goudoti, *Günth. Cat.* p. 82.

Boophis goudoti, *Tschudi, Batr.* p. 77.

Polypedates goudoti, *Dum. & Bibr.* p. 517; *Steind. Verh. zool.-bot. Ges. Wien*, 1864, p. 253, pl. 10, f. 1.

Vomerine teeth in a straight line behind the level of the choanæ. Snout rounded; canthus rostralis distinct; loreal region slightly concave; nostril nearer the eye than the tip of the snout; inter-orbital space a little broader than the upper eyelid; tympanum two thirds or three fourths the size of the eye. Fingers nearly one-third webbed; toes nearly entirely webbed; disks of fingers and toes moderate, about half the diameter of the tympanum; sub-articular tubercles moderate; a small inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the tip of the snout, or nearly so far. Smooth above, granular beneath; a strong fold above the tympanum. Brown above, sometimes with large round light spots. Male with an internal vocal sac.

Madagascar.

a. ♀. Madagascar.
b-c. ♂ & hgr. — ?
d. ♀. — ?

Rev. — Ellis [P.].

Theloderma leprosum, Tsch.

a. ♂ Hills of Larut, Perak, 4000 ft. Gray.
(Type of Polypedates leprosum, Jthv.).

Rhacophorus rhodocelis, Blg.

a-e, ♂, ♀ + ngr. C. Betsileo D. Couan.
f. ♀ Antakana, Betsileo "
g. ♀ Madagascar. Peracca.

e-f, g-h, ♂ ♀ C. Betsileo D. Couan.
i-k, ♂ ♀ Madagascar Bason.
l-m, ♂ ♀ Fianarantsoa. Major.

Rhacophorus Lemnoralis, Blgr.
 a 1/2 yr. E. Betsileo D. Cowan.

a ♂ Nossi Bé. *Leimnaea*
 b. ♀ Tamatave. (Cowan.
 c-e ♀ Nossi Bé. Gronenberg Mus.
 f. ♀ Madagascar. Majaster.
Rhacophorus Bretteri, Blgr.
 a-c-d. ♂ ♀ E. Betsileo D. Cowan
 e-f. ♀ Ankafana, Betsileo, "

Rhacophorus pulcher, Blgr.
 a-c. yg. Ankafana, Betsileo Cowan.

Rhacophorus depressiceps, Blgr.
 a ♂ E. Betsileo D. Cowan
 c-d. ♂ Ankafana, Betsileo "

tephracomystax, A. Dum.2. *Rhacophorus dispar*.

Polypedates dispar, Boettg. Ber. Senckenb. Ges. 1878-79, p. 86, and
Abhandl. Senckenb. Ges. xi. 1879, p. 32.

Vomerine teeth in two groups behind the level of the hinder edge of the choanæ. Snout as in *R. maculatus*; canthus rostralis moderate; loreal region slightly concave; tympanum about half the size of the eye. Fingers slightly but distinctly webbed; toes entirely webbed; disks moderate, much smaller than the tympanum; a small, prominent, inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches in front of the eye. Skin smooth above, with numerous small warts on the middle of the back and along the limbs in the male; granular beneath; a fold above the tympanum. Greyish or brown above, variously spotted or dotted with blackish; canthus rostralis blackish; male with two whitish lines along each side of the back; limbs cross-barred.

Nossi Bé, Madagascar.

3. *Rhacophorus crossleyi*.

Polypedates crossleyi, Peters, Mon. Berl. Ac. 1874, p. 618.

Vomerine teeth in two oblique groups beginning on a level with the hinder edge of the choanæ. Snout rounded; canthus rostralis distinct; loreal region very slightly concave; nostril nearer the tip of the snout than the eye; interorbital space broader than the upper eyelid; tympanum half the width of the eye. Fingers very slightly webbed; toes nearly entirely webbed; disks of fingers and toes well developed, as large as the tympanum; subarticular tubercles moderate; a small inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the eye, or slightly beyond. Skin smooth, granular on the belly and under the thighs; a strong fold above the tympanum. Light greyish brown above, with black specks; loreal and temporal regions darker; limbs rather indistinctly cross-barred. Male with an internal vocal sac.

Madagascar.

a-b. ♂ ♀.

Madagascar.

c. Hgr.

Anzahamaru.

d. ♀

Sembudrana.

Majaster.

4. *Rhacophorus? lugubris*.

= *R. femoralis*.

Polypedates lugubris, A. Dum. Ann. Sc. Nat. (3) xix. p. 157.

Vomerine teeth in two oblique series between the choanæ. Nostril near the tip of the snout; tympanum nearly as large as the eye. Belly quite smooth. Blackish brown above, slightly speckled with white; belly whitish, mottled with black.

Madagascar.

5. *Rhacophorus* ? *tephræomystax*.

Polypedates tephreomystax, *A. Dum. Ann. Sc. Nat.* (3) xix. p. 158.

Vomerine teeth in two oblique series between the choanæ. Snout short, rounded; nostril a little nearer the tip of the snout than the eye; tympanum much smaller than the eye. Belly covered with very large glandules. Yellowish grey above, more or less spotted with black; limbs cross-barred.

Madagascar.

6. *Rhacophorus hecticus*.

Polypedates hecticus, *Peters, Mon. Berl. Ac.* 1863, p. 457.

Vomerine teeth in two oblique series between the choanæ. Snout rounded; canthus rostralis distinct; loreal region concave; nostril nearer the tip of the snout than the eye; tympanum two thirds the width of the eye. Fingers slightly, toes nearly entirely webbed; disks of fingers very large, heart-shaped, of toes much smaller; sub-articular tubercles moderate; two metatarsal tubercles. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches beyond the tip of the snout. Skin tubercular above, smooth beneath; a narrow glandular fold along each side of the back; another from the angle of the mouth below the tympanum to the axilla. Greyish blue above; glandular folds white, black-edged; upper lip white. Male without vocal sac.

Samar Island.

7. *Rhacophorus stictomerus*.

Ixalus stictomerus, *Günth. Proc. Zool. Soc.* 1875, p. 575, pl. 66. f. C.

Vomerine teeth in two small groups close to the inner edges of the choanæ. Snout rather pointed; canthus rostralis distinct; loreal region nearly flat; nostril nearer the tip of the snout than the eye; interorbital space scarcely broader than the upper eyelid; tympanum one third the width of the eye. Fingers slightly, toes two-thirds webbed; disks and subarticular tubercles moderate; a small inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches in front of the eye. Skin smooth, granular on the belly and under the thighs; a fold above the tympanum. Light brown above, with indistinct symmetrical markings; loreal region dark brown; a black temporal streak; limbs indistinctly cross-barred; front and hinder side of thighs minutely speckled with blackish; beneath immaculate.

Ceylon.

a. Hgr. (♀).

Ceylon.

Col. Beddome [P.]
(Type.)

a. ♀

Rhacophorus opisthodon Bly.
Madagascar. Bartlett. 1 Type

-c. ♂ ♀ Rhacophorus liber Peracca.
Andranoloka, Madagascar. Peracca.
(Type)



8. *Rhacophorus surdus*.

Polypedates surdus, *Peters, Mon. Berl. Ac.* 1863, p. 459.

Vomerine teeth in two short oblique series between the choanæ. Snout rounded; canthus rostralis distinct; loreal region concave; nostril nearer the tip of the snout than the eye; tympanum entirely hidden. Fingers slightly, toes a little more than half webbed; disks of fingers moderate, of toes rather large; two slightly developed metatarsal tubercles. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the tip of the snout. Skin with a few very small tubercles above, granular beneath. Dark brown above; a greenish-white stripe from the eye to the axilla; sides of the body brown-marbled on whitish ground; limbs cross-barred; hinder side of thighs marbled with brown; brown beneath, the throat speckled with white.

Luzon.

9. *Rhacophorus microtympanum*.

Polypedates microtympanum, *Günth. Cat.* p. 77, pl. vi. f. A.

Polypedates microtympanum, *Günth. Rept. Brit. Ind.* p. 430.

Vomerine teeth in two small oblique groups between the choanæ. Snout short, rounded; canthus rostralis distinct; loreal region slightly concave; nostril nearly halfway between the eye and the tip of the snout; interorbital space broader than the upper eyelid; tympanum not half the width of the eye. Fingers slightly, toes half webbed; disks of fingers and toes well developed, as large as the tympanum; subarticular tubercles well developed; a small inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches between the eye and the tip of the snout. Skin smooth above, or with small warts; a narrow fold above the tympanum; beneath granular. Grey or brownish above, blackish spotted; generally a cross band between the eyes and a curved stripe on each side of the back; limbs cross-barred. Male with an internal vocal sac.

Ceylon.

<i>a, b, c, d-e, f-i.</i> ♂, ♀, & yg.	Ceylon.	(Types.)
<i>k, l, m-n.</i> ♂, ♀, hgr., & yg.	Ceylon.	
<i>o.</i> Hgr.	Ceylon.	Dr. Kelaart [P.].
<i>p.</i> Several spec., ♀ & yg.	Ceylon.	G. H. K. Thwaites, Esq. [P.].
<i>q-r.</i> Yg.	Newera Ellia.	Dr. A. Günther [P.].
<i>s.</i> ♀.	S. Ceylon.	

10. *Rhacophorus pleurostictus*.

Polypedates pleurostictus, *Günth. Rept. Brit. Ind.* p. 430, pl. 26.
f. I.

Resembles very much *R. microtympanum*. Fingers rather longer

(with bifurcate terminal phalanges) and more distinctly webbed. Greenish or greyish above, with or without dark insuliform spots; limbs cross-barred; flanks and hinder side of thighs brown, the former marbled, the latter speckled with white.

India.

a. ♀.	Madras.	Zool. Soc.	} Types.
b-c. ♀ & hgr.	Madras.	T. C. Jerdon, Esq. [P.].	
d. ♀.	Ootacamund.	F. Day Esq. [P.].	
e. Many spec.: ♀, hgr., & yg.	Malabar.	Col. Beddome [P.].	
f-g. Hgr.	Anamallays.	Col. Beddome [P.].	
h-m. ♀, hgr., & yg.	Nilgherries.	T. C. Jerdon, Esq. [P.].	

11. *Rhacophorus reticulatus*.

Polypedates reticulatus, *Günth. Rept. Brit. Ind.* p. 431, pl. 26. f. F, and *Ann. & Mag. N. H.* xvii. 1876, p. 376, pl. 20. f. C.

Vomerine teeth in two oblique groups between the choanæ. A conical papilla on the middle of the tongue. Snout rounded; canthus rostralis distinct; loreal region slightly concave; nostril much nearer the tip of the snout than the eye; interorbital space broader than the upper eyelid; tympanum half the width of the eye. Fingers very slightly, toes nearly entirely webbed; disks of fingers and toes as large as the tympanum; subarticular tubercles moderate; a small inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the tip of the snout, or slightly beyond. Skin smooth above, granular beneath; a narrow fold above the tympanum. Brown above, with small darker spots; a more or less distinct dark cross band between the eyes; flanks and hinder side of thighs with a network of dark-brown lines; legs indistinctly cross-barred; throat brown-spotted.

Ceylon.

a. ♀.	Ceylon.	(Type.)
b-c. ♀ & eggs.	Ceylon.	W. Ferguson, Esq. [P.].
d-e, f. Hgr.	Ceylon.	
g. ♀.	C. Ceylon.	G. H. K. Thwaites, Esq. [P.].

12. *Rhacophorus jerdonii*. (PLATE VIII. fig. 1.)

Polypedates jerdonii, *Günth. Proc. Zool. Soc.* 1875, p. 571.

Vomerine teeth in two small groups between the choanæ. Snout rounded; canthus rostralis rounded; loreal region very slightly concave; nostril equally distant from the tip of the snout and the eye; interorbital space broader than the upper eyelid; tympanum one third the width of the eye. Fingers distinctly webbed; toes two-

h. ♀.

Punduloya, 4000 ft.

green.



thirds webbed; disks larger than the tympanum; subarticular tubercles moderate; a small inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the eye. Skin smooth, granular on the belly and under the thighs; a fold above the tympanum. Greyish above, forehead and sides of the body lighter; legs irregularly cross-barred; hinder side of thighs colourless; throat brown-spotted. Male with an internal vocal sac.

Darjeeling.

a-b. ♂ ♀.

Darjeeling.

T. C. Jerdon, Esq. [P.]. (Types.)

13. *Rhacophorus dubius*. (PLATE VIII. fig. 2.)

Ixalus jerdonii, *Günth. Proc. Zool. Soc.* 1875, p. 575.

Vomerine teeth —? Tongue with a free conical papilla in the middle. Snout rounded; canthus rostralis distinct; loreal region slightly concave; nostril equally distant from the eye and the tip of the snout; interorbital space broader than the upper eyelid; tympanum one third the width of the eye. Fingers slightly, toes two-thirds webbed; disks of fingers as large as the tympanum, of toes rather smaller; subarticular tubercles well developed; a small inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the eye. Skin smooth above, granular beneath; a fold from the eye to the shoulder. Reddish brown above, with indistinct markings; thighs colourless in front and behind.

Though the single specimen exhibits no vomerine teeth, I am inclined to think that this is accidental, and that therefore this species must be referred to *Rhacophorus*.

Darjeeling.

a. ♀.

Darjeeling.

T. C. Jerdon, Esq. [P.]. (Type of *Ixalus jerdonii*.)

14. *Rhacophorus nanus*.

Polypedates nanus, *Günth. Proc. Zool. Soc.* 1868, p. 485, pl. 39. f. 3.

Ixalus macropus, *Günth. l. c.* p. 484, pl. 39. f. 4.

Vomerine teeth in two small groups between the choanæ. A conical papilla in the middle of the tongue. Snout rounded; canthus rostralis angular; loreal region slightly concave; nostril nearer the tip of the snout than the eye; interorbital space scarcely broader than the upper eyelid; tympanum one third the width of the eye. Fingers slightly webbed, toes half webbed in the young, generally nearly entirely in the adult; disks of fingers and toes as large as the tympanum; subarticular tubercles moderate; a small inner metatarsal tubercle. The hind limb being carried forwards

along the body, the tibio-tarsal articulation reaches the tip of the snout, or somewhat beyond. Upper parts smooth or with small tubercles; a fold above the tympanum; belly and under surface of thighs granular. Brownish above, with symmetrical dark markings on the back; sometimes a light vertebral stripe; limbs cross-barred; beneath yellowish; throat sometimes brown-spotted. Male with an internal vocal sac.

Ceylon; (~~Ningpo?~~).

a. Several spec., ♂ & yg.	S. Ceylon.	(Types of <i>Polypedates nanus</i> .)
b-d. ♂ ♀.	Ceylon.	W. Ferguson, Esq. [P.].
e-i. ♂ ♀.	Ceylon.	G. H. K. Thwaites, Esq. [P.].
k. ♀ (vomerine teeth none).	Ceylon.	(Type of <i>Ixalus macropus</i> .)
l. ♀.	Ningpo (?)	

15. *Rhacophorus fergusonii*. (PLATE VIII. fig. 3.)

Vomerine teeth in two very small groups close to the inner front edge of the choanæ. Snout subtriangular; canthus rostralis distinct; loreal region slightly concave; nostril nearer the tip of the snout than the eye; interorbital space a little broader than the upper eyelid; tympanum half the width of the eye. Fingers very slightly, toes nearly entirely webbed; disks nearly as large as the tympanum; subarticular tubercles moderate; a small inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches between the eye and the tip of the snout. Skin smooth, granular on the belly and under the thighs; a fold above the tympanum; lower surface of forearm and tarsus tubercular. Greyish above, indistinctly marbled with darker; limbs cross-barred; throat speckled with brown. From snout to vent 45 millim.

Ceylon.

a. ♀.

Ceylon.

W. Ferguson, Esq. [P.].

16. *Rhacophorus cavirostris*.

Polypedates cavirostris, *Günth. Proc. Zool. Soc.* 1868, p. 486, pl. 39. f. 1.

Ixalus fimbriatus, *Günth. Ann. & Mag. N. H.* 1872, ix. p. 87.

Vomerine teeth in two small groups between the choanæ. Snout rounded; canthus rostralis angular; loreal region deeply concave; nostril much nearer the tip of the snout than the eye; interorbital space as broad as, or broader than, the upper eyelid; tympanum nearly half the width of the eye. Fingers slightly, toes nearly entirely webbed; disks about two thirds the diameter of the tympanum; subarticular tubercles moderate; a small inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches between the eye and the tip of the

m. ♀ Punduloya, 4000 ft. green.

b. ♀ Rhacophorus everetti, Bly
Palawan. Everett. (Type)

Rhacophorus maculatus, Gray.

a, b, c.	Ad.	Ceylon.	Kelaart.
d.	"	Bombay.	Leith.
e.	Hgg.	Malabar.	Beddome.
f, h.	♀	Mhoel, E. of Chanda.	Blanford.
i, l.	Larva.	Pondicherry.	Heron Royer.

snout. Upper parts with small tubercles; a fold above the tympanum; outer edge of forearm and of tarsus with a denticulate fringe; a patch of pointed tubercles below the vent; belly and underside of thighs granular. Reddish brown above, marbled with dark brown and speckled with black; limbs cross-barred; hinder side of thighs not coloured; throat speckled with brown. Male with an internal vocal sac.

Ceylon.

- a. ♀. S. Ceylon.
b. Yg. Ceylon.
c. ♀. Ceylon.

(Type of *Polypedates cavirostris*.)
G. H. K. Thwaites, Esq. [P].
G. H. K. Thwaites, Esq. [P].
(Type of *Ixalus fimbriatus*.)

17. *Rhacophorus davidi*.

Polypedates davidi, *Sauvage, Bull. Soc. Philom.* (7) i. 1877, p. 117.

Vomerine teeth in two short, slightly oblique series between the choanæ. Snout rounded; canthus rostralis moderate; nostril equally distant from the eye and the tip of the snout; tympanum rather more than half the width of the eye. Fingers slightly, toes more than half webbed; disks rather large. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches in front of the eye. Skin smooth above, granular on the belly. Above slate-coloured, with large yellow spots; sides of body, inferior surface of limbs, throat and breast yellowish, with undulous slate-coloured line; belly with black punctulations.

Moupin, China.

3 species confounded under

18. *Rhacophorus maculatus*.

Polypedates maculatus, *Günth. Cat.* p. 78.

Hyla maculata, *Gray, Ind. Zool.*

compta [— *leucomystax*, *Gravenh. Delic.* p. 26.]
Polypedates leucomystax, [Tschudi, *Batr.* p. 75] *Dum. & Bibr.* p. 519;
Kelaart, Prodr. Faun. Zeyl. p. 193.

Bürgeria maculata, *Tschudi, l. c.*

compta [— *Polypedates rugosus*, *Dum. & Bibr.* p. 520]
reigen [— *cruciger*, *Blyth, in Kelaart, Prodr. App.* p. 48]
compta [— *megacephalus*, *Hallow. Proc. Ac. Philad.* 1860, p. 48]
[— *maculatus*, *Günth. Rept. Brit. Ind.* p. 428; *Blanford, Journ. As. Soc.* 1870, p. 376; *Anders. Proc. Zool. Soc.* 1871, p. 307; *Stoliczka, Proc. As. Soc.* 1872, p. 106.
— *biscutiger*, *Peters, Mon. Berl. Ac.* 1871, p. 649.

Vomerine teeth in two more or less oblique series commencing on the inner front edge of the choanæ. Head generally bony and rugose above in adult specimens; snout subtriangular; canthus rostralis distinct; loreal region concave; nostril much nearer the tip of the snout than the eye; interorbital space much broader than the

upper eyelid; tympanum nearly as large as the eye. Fingers slightly, toes nearly entirely webbed; disks of fingers and toes well developed, about half the diameter of the tympanum; subarticular tubercles moderate; a single, small, inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the tip of the snout. Skin smooth above, strongly granular on the belly and under the thighs; a narrow fold above the tympanum. Greyish or brown above, with or without brown spots and a large hourglass-shaped figure on the hinder part of the head and the front part of the back; legs cross-barred; hinder side of thighs brown, with round white spots. Male with an internal vocal sac.

S.E. Asia.

a, b-e. ♂, ♀,
hgr., & yg.

f, g. Hgr.

h. ♀.

i. Several spec.:

♂, ♀, & hgr.

k. Hgr.

l. ♀.

m. Hgr.

n. ♀.

o/p. ♀.

q-r, s-t, u-w. ♂ ♀.

x-y. ♂ ♀ (with tadpoles
and spawn of a species
of frog).

z-β. ♂ & hgr.

γ-δ. Hgr.

ε. ♀.

ζ. ♀.

η. ♀.

θ. ♀.

ι. ♀.

κ. Hgr.

λ-ν. ♀.

ξ-o. ♀.

π. Adult skeleton.

China.

Hong Kong.

Sikkim.

Darjeeling.

Nilgherries.

Matheran.

Bombay.

Malabar.

Ceylon.

Ceylon.

Kandy, Ceylon.

Salem, Madras Pres.

Madras.

Ganjam.

Siam.

Siam.

Gamboja.

Cochin China.

Tenasserim.

Borneo.

Manado.

Ceylon.

J. Reeves, Esq. [P.].

J. C. Bowring, Esq. [P.].

Messrs. v. Schlagintweit
[C.].

T. C. Jerdon, Esq. [P.].

W. Theobald, Esq. [P.].

Dr. Leith [P.].

Dr. Leith [P.].

Dr. Günther [P.].

Dr. Kelaart.

Mr. Holdsworth [P.].

Col. Beddome [P.].

T. C. Jerdon, Esq. [P.].

F. Day, Esq. [P.].

J. C. Bowring, Esq. [P.].

M. Mouhot [C.].

M. Mouhot [C.].

Dr. Günther [P.].

Dr. Parkman [P.].

L. L. Dillwyn, Esq. [P.].

Dr. A. B. Meyer [C.].

R. leucomystax. Var. *quadrilineata*.

Polypedates quadrilineatus, Günth. Cat. p. 79.

Hyla quadrilineata, Wieg. Acta Ac. Cæs. Leop.-Carol. 1835, p. 260,
t. 22. f. 1.

Limnodytes celebensis, Fitzing. Sitzb. Ac. Wien. xlii. p. 413.

Polypedates quadrilineatus, Günth. Rept. Brit. Ind. p. 429;
Steindachn. Verh. zool.-bot. Ges. Wien, 1864, p. 253, pl. 10. f. 2;
Anders. Proc. Zool. Soc. 1871, p. 207.

Above with four or six parallel longitudinal dark bands.

Rhacophorus leucomystax, Gravh.

aa.	♀	Nias	Sandemann.
ββ.	♀	Sumatra.	Forbes.
γγ.	♀	Bills Mt. Java.	v. Huegel.
δδ. εε.	♂ ♀	Rangoon.	Bingham.
ζζ.	♂	Deli, Sumatra.	Moesch.
ηη. θθ.	♂ ♀	Toungoo.	Oates.
ιι. κκ.	♀ yg.	Darjeeling.	Blanford.
λλ.	♀	Sarawak.	Everett.
μμ. νν.	♀	Thayetmyo.	Watson.
ξξ. οο.	♂ ♀	Kina Baloo.	Everett
ππ. ρρ.	yg.	Isabella, N. E. Luzon.	Whitehead.
σσ.	♂	Jk. Natuna Id.	Everett.

ii. ♀ Rasat, I. E. Borneo. Fischer.
 (Type of Stylorana longipes)

Rhacophorus macrotis, Bly.

- a. ♀ Baram, Borneo. Hors (Type)
 b. Hys. Balabac. Everett.
 c. " Palawan "
 d. e. ♀ Great Natuna I? Hors
 f. g. ♀ Akas R, Sarawak. "
 h. k. ♀ rys. Sandakan, N. Borneo. Cator.

Rhacophorus colletti, Bly.

- a. ♀ Paitan, N. Borneo. Everett
 b. c. ♀ rys. Lumbidan, N. Borneo. "
 d. ♀ St. Natuna I. "

$\rho-\sigma$. ♂ ♀.	Singapore.	
$\tau-\chi$. ♀.	Java.	Leyden Museum.
$\psi-bb$, $cc-dd$. ♀ & hgr.	Philippines.	
ee . ♀.	Formosa.	M. Dickson, Esq. [P.].
$ff-hh$. ♀, hgr., & yg.	E. Indies.	

19. *Rhacophorus eques*.Polypedates eques, *Günth. Cat.* p. 80, pl. vi. f. B.Polypedates eques, *Günth. Rept. Brit. Ind.* p. 431.

Vomerine teeth in two oblique series commencing from the inner front edge of the choanæ. Snout triangular; canthus rostralis angular; loreal region concave; nostril much nearer the tip of the snout than the eye; interorbital space broader than the upper eyelid; tympanum about two thirds the width of the eye. Fingers very slightly, toes two-thirds webbed; disks of fingers nearly as large as the tympanum, of toes rather smaller; subarticular tubercles moderate; a small inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches between the eye and the tip of the snout. Upper parts smooth; beneath granular; a narrow glandular fold from behind the eye to beyond the shoulder; another along the forearm and tarsus; tibio-tarsal articulation with a cutaneous spur; vent surrounded by large tubercles. Greyish above, with a dark hourglass-shaped spot on the back, commencing between the eyes; legs cross-barred. Male with an internal vocal sac.

Ceylon.

a , $b-f$. ♂.	Ceylon.	(Types.)
$g-h$, i . ♀.	Ceylon.	Sir A. Smith [P.].
k . ♀.	Ceylon.	Dr. Kelaart.
l . ♀.	Ceylon.	Mr. Holdsworth [P.].

20. *Rhacophorus nasutus*.Polypedates nasutus, *Günth. Proc. Zool. Soc.* 1868, p. 486, pl. 39. f. 2.

Very closely allied to *R. eques*. Snout much longer, equalling about twice the greatest diameter of the eye, its extremity projecting in a pointed cutaneous appendage. Otherwise exactly the same as *R. eques*. Brownish olive above; legs with dark cross-bands; two blackish lines along each side of the body, and another along the middle of the throat; lower lip black-margined.

Ceylon.

a . ♀.	S. Ceylon.	(Type.)
b . ♀.	Ceylon.	G. H. K. Thwaites, Esq. [P.].

21. *Rhacophorus appendiculatus*. (PLATE VIII. fig. 4.)

Polypedates appendiculatus, *Günth. Cat.* p. 79.

Vomerine teeth in two oblique series commencing from the inner front edge of the choanæ. Snout subtriangular; canthus rostralis rounded; loreal region slightly concave; nostril nearer the tip of the snout than the eye; interorbital space as broad as the upper eyelid; tympanum half the width of the eye. Fingers one third, toes nearly entirely webbed; disks well developed, about as large as the tympanum; subarticular tubercles very prominent, double under the third and fourth fingers; a small inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the tip of the snout. Skin smooth above, or with small warts, granular on the belly and under the thighs; cutaneous prominences beneath the vent and on the tibio-tarsal articulation; a cutaneous fringe along the inner edge of the tarsus and forearm. Greyish above; legs indistinctly cross-barred.

Philippine Islands.

a. Hgr. Philippines.
b. Hgr. Dinagat Island.

(Type.)
Mr. Everett [C.].

22. *Rhacophorus tuberculatus*.

Polypedates tuberculatus, *Anders. Journ. As. Soc.* 1871, p. 26.

Vomerine teeth in two widely separated small rounded groups close to the internal angle of the choanæ. Snout rounded and somewhat pointed; canthus rostralis indistinct; nostril near the tip of the snout; tympanum two thirds the size of the eye. Fingers broadly webbed, the membrane between the three outer reaching the disks; toes incompletely webbed; disks large; a small oblong inner metatarsal tubercle. Skin smooth; belly and underside of thighs granular, the granules intermixed with large round tubercles; a fold above the tympanum. Upper surfaces uniform deep brown; legs faintly cross-barred; sometimes a violet spot on the tip of the snout, another before the eye, and a broad violet band with dark margins from the eye along the side to the groin; brownish yellow below, with a blackish region round the vent, a short way along the thighs; tubercles of abdomen and thighs darker.

Seebisang, Assam.

23. *Rhacophorus schlegelii*. (PLATE IX. fig. 1.)

Polypedates schlegelii, *Günth. Cat.* p. 81, pl. vi. fig. G.

Hyla arborea, var. *japonica*, part., *Schleg. Faun. Japon.* p. 112, pl. 3. f. 5.

~~? *Polypedates viridis*, *Hallow. Proc. Ac. Philad.* 1860, p. 481.~~

Vomerine teeth in two slightly oblique series commencing from the inner front edge of the choanæ. Snout rounded; canthus ros-

- Rhacophorus otitophus, Blgr.
 a. ♂ Bongou, N. Borneo. Everett. (Type)
 b. Several larvae. Bongou. "
 c. ♀ Busan, Sarawak "

- Rhacophorus hosii, Blgr.
 a. ♀ Pata R., Sarawak. Hose (Type).

- c. Agr. Mt. Dulit, Borneo. Hose.
 d. ♀ Sarawak. Everett.

- Rhacophorus acutirostris, Macg.
 a. Agr. Kina Baloo. Whitehead.
 (One of the types)
 b. ♀ Kina Baloo, 3000 ft. Everett.

- Rhacophorus verrucosus, Blgr.
 ♀ Karin hills. Lea. (One of the types)

- Rhacophorus luteus, Blgr.
 a. b. ♂ & agr. Ankafana, Zetsile. Drouan.
 c. ♂ Sentendrana. Majaster

Rhacophorus edentulus, F. Müll.
a. Agr. Tomohon, Celebes. Sarasin
(One of the types)

d. ♀
e-f. ♂
Yokohama
Enoshima
(Challenger.
Anderson.)

Rhacophorus viridis, Hallow.
a. ♀ Loo Choo I? Pryer.
b. ♂ Great Loo Choo I? Holst.

Rhacophorus lateralis, Blgr.
a. Agr. Malabar. Beddome (Type)

tralis distinct; loreal region slightly concave; nostril equally distant from the eye and the tip of the snout; interorbital space scarcely broader than the upper eyelid; tympanum half the width of the eye. Fingers nearly half webbed; toes nearly entirely webbed; disks of fingers and toes well developed, about two thirds the size of the tympanum; subarticular tubercles moderate; a rather large, but little prominent inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches hardly the eye. Skin smooth above, granular beneath; a fold above the tympanum. Bluish green above, immaculate. Male with an internal vocal sac.

Japan.

a-b, c. ♂, ♀, & hgr.

Japan.

Leyden Museum.
(Types.)

24. *Rhacophorus microglossus*. (PLATE IX. fig. 2.)

Tongue extremely small. Vomerine teeth in two slightly oblique series commencing from the inner front edge of the choanæ. Snout rounded; canthus rostralis distinct; loreal region slightly concave; nostril equally distant from the eye and the tip of the snout; interorbital space broader than the upper eyelid; tympanum half the width of the eye. Fingers half webbed, toes three-fourths webbed; disks of fingers and toes moderate, not quite two thirds the diameter of the tympanum; subarticular tubercles not very prominent; a small inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation marks the front of the eye. Skin smooth above, granular beneath; a fold above the tympanum. Violet above, immaculate; thighs not coloured, except a narrow violet streak along their upper side; sides of body and of limbs with small blackish specks; a white line along the outer edge of forearm and tarsus. Male with an internal vocal sac.

— ?

a. ♂.

— ?

Sir Edward Belcher [P.].

25. *Rhacophorus dennysii*.

Rhacophorus dennysii, *Blanford, Proc. Zool. Soc.* 1881, p. 224, pl. 21. f. 3.

Vomerine teeth in two straight ridges, nearly in the same right line, commencing from the inner front edge of the choanæ. Snout rounded; tympanum very little smaller than the eye. Fingers and toes with very large disks, the former incompletely, the latter entirely webbed, reaching the disks. Folds along the edges of the limbs inconspicuous. Dark violet above, below dirty white mottled with dusky; a brown spot behind the occiput; no spots on the membrane between the fingers and toes.

China ?

a. ♀

Foochow.

Rickett.

26. *Rhacophorus maximus*. (PLATE IX. fig. 3.)*Rhacophorus maximus*, *Günth. Cat.* p. 83.*Rhacophorus maximus*, *Günth. Rept. Brit. India*, p. 435; *Anders. Proc. Zool. Soc.* 1871, p. 210; *Stoliczka, Proc. As. Soc.* 1872, p. 108.
— *gigas*, *Jerdon, Proc. As. Soc.* 1870, p. 84.

Vomerine teeth in two straight or slightly oblique series on a level with the front edge of the choanæ. Snout rounded; canthus rostralis distinct; loreal region concave; nostril halfway between the eye and the tip of the snout; interorbital space broader than the upper eyelid; tympanum somewhat more than half the width of the eye. Fingers and toes webbed to the disks, which are as large as the tympanum; subarticular tubercles well developed; a rather large, but not very prominent, inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches nearly the tip of the snout. Skin smooth above, granular beneath; a fold above the tympanum. Violet or blue-green above, immaculate. Male with an internal vocal sac.

Himalayan Region.

<i>a.</i> ♀.	Afghanistan (?).	B. H. Hodgson, Esq. [P.]. Messrs. v. Schlagenweit [C.]. T. C. Jerdon, Esq. [P.].	} Types.
<i>b-d.</i> ♂ ♀.	Nepal.		
<i>e.</i> ♀.	Sikkim.		
<i>f-i.</i> ♀, hgr., & yg.	Darjeeling.		
<i>k-l.</i> ♂ ♀.	Darjeeling.		
<i>m-p.</i> ♂, ♀, & yg.	Assam.	W. T. Blanford, Esq. [P.]. W. T. Blanford, Esq. [P.].	
<i>q-t.</i> ♀, hgr., & yg.	Khassya.	T. C. Jerdon, Esq. [P.].	

27. *Rhacophorus reinwardtii*.*Rhacophorus reinwardtii*, *Günth. Cat.* p. 82.*Hypsiboas reinwardtii*, (*Boie*) *Wagl. Syst. Amph.* p. 200.*Hyla reinwardtii*, 1 art., *Schleg. Abbild.* p. 105, pl. 30. f. 1, 2, & 4.*Rhacophorus reinwardtii*, *Tschudi, Batr.* p. 73; *Dum. & Bibr.* p. 532.

Vomerine teeth in a straight line between the front edges of the choanæ. Snout rounded; canthus rostralis distinct; loreal region slightly concave; nostril equally distant from the eye and the tip of the snout; interorbital space as broad as the upper eyelid; tympanum three fourths the width of the eye. Fingers and toes webbed to the disks, which are as large as the tympanum; subarticular tubercles moderate; a small inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches between the eye and the tip of the snout. Skin smooth, granular on the belly and under the thighs; a fold round the tympanum; a cutaneous fringe along the forearm, the fourth finger, the tarsus, and the fifth toe; a transverse flap of skin above the vent and another on the tibio-tarsal articulation. Olive or lilac above, uniform;

Rhacophorus fe~~u~~, Bly.
a. ♀ Karim hills. Fea (One of the types)

Rhacophorus fasciatus, Bly.
a. b. ♂ ♀ Akar R., Sarawak. Hore. (Types)

Rhacophorus nigropalmatus, Bly.
a. ♀ Akar R., Sarawak. Hore (Type).

d. ♂
e-g. ♂♀

Java.
"

Frühstorfer.

a black spot on the axillæ; membrane between the three outer fingers and the four outer toes with a large black spot. Male with an internal vocal sac.

Java; Sumatra.

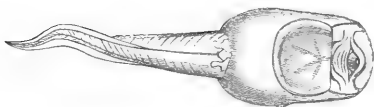
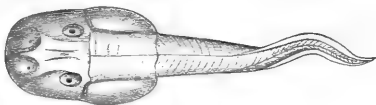
a-b. ♂ ♀.

Batavia.

c. Hgr.

Java.

Leyden Museum.



~~? Rhacophorus reinwardtii.~~

Larva.

see p. 67.

There are in the Collection three tadpoles from Posata, Bantam, quite different from any Batrachian larva ever noticed, they being furnished with an adhesive ventral disk, very similar to that of the fishes of the family *Gobiosocidae*. In one of these tadpoles the hind limbs are already so much developed as to show that the toes are webbed to the tips, which are dilated into large disks. *Rhacophorus reinwardtii* being the Javan Frog in which the toes are the most broadly webbed and furnished with large dilatations, I refer these larvæ provisionally, though not without doubt, to the present species.

Body twice as long as broad; spiraculum lateral, on the left side, nearer the base of the tail than the end of the snout. Beak strong, upper mandible transparent, lower black; lips much developed, their inner surface lamellated. The adhesive ventral apparatus represents a disk the anterior third of which is cut off; it is situated immediately behind the mouth, and its posterior border corresponds to the vertical of the spiraculum; the lateral and posterior borders are free to a slight extent. The tail measures once and two thirds or once and

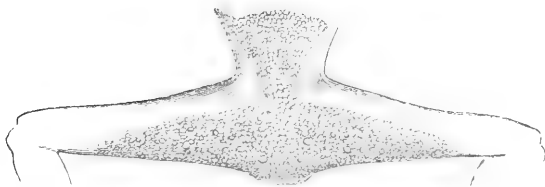
three fourths the length of the body ; it ends into a point ; there is an elevated superior and inferior crest, but it commences only at a considerable distance from the base of the tail ; the vertical diameter of the latter, crest not included, is about one fifth of its length. Greyish brown above, whitish beneath ; tail light-spotted. The largest specimen measures 46 millim., the smallest 38 millim.

28. *Rhacophorus malabaricus*.

Hyla reinwardtii, part., *Schleg. Abbild.* p. 105, pl. 30. f. 3.

Rhacophorus reinwardtii, part., *Dum. & Etibr.* p. 532, pl. 89. f. 1.

— *malabaricus*, *Jerdon, Proc. As. Soc.* 1870, p. 84.



Lower surface of thighs.

Very closely allied to *R. reinwardtii*, from which it differs chiefly by the coloration. Nostril a little nearer the tip of the snout than the eye. Cutaneous flap above the vent slightly developed ; granules under the thighs intermixed with larger ones. Purplish above, often speckled all over with blackish ; no spots on the sides of the body nor on the membrane between the fingers and toes.

Malabar.

a. ♀.

Malabar.

T. C. Jerdon, Esq. [P.].

b, c-g. ♀ & yg.

Malabar.

Col. Beddome [C.].

29. *Rhacophorus bimaculatus*.

Rhacophorus reinwardtii, *Jerdon, Proc. As. Soc.* 1870, p. 84.

— *maculatus*, *Anders. Journ. As. Soc.* 1871, p. 27.

Also very closely allied to *R. reinwardtii*. Vomerine series slightly oblique. Cutaneous flap above the vent and folds along the limbs slightly developed. Purple, bluish, or greenish above, sometimes speckled with black ; a large black spot on each side behind the arm, generally followed by a smaller one ; no spots on the membrane between the fingers and toes.

Eastern Himalayan region.



Rhaophorus dulitensis, Bly.

- a. ♀ (?) Mt. Dulit, Borneo. Hose (Type)
 b. Hrs. Sandakan, N. Borneo. Cator.

- h. ♀ S. E. Borneo. Fischer.
 i. ♂ Mengalong R., N. W. Borneo. Everett.
 k. ♀ Labuan. "
 l. ♀ N. Borneo. "
 m. ♀ Sereins, Mentawai Is. Modigliani
 n. ♂ Sandakan, N. Borneo. Cator.
Rhaophorus beddomei, Bly.
 a. ♂ Calicut Hills, "inverity, 3000 ft. Beddome.
 (Type).

Rhaophorus allilabris, Bly.

- a. ♂ S. Merina, Madagascar. Barou (Type)

- a. Many spec., ♂ ♀.
b. ♂.

Khassya.
Assam.

T. C. Jerdon, Esq. [P].
W. T. Blanford, Esq. [P].

30. *Rhacophorus pardalis*.

Rhacophorus pardalis, *Günth. Cat.* p. 83.

Rhacophorus reinwardtii, *Eyd. & Soul. Voy. Bonite*, pl. 10. f. 1.

Vomerine teeth in two slightly oblique series commencing on the inner front edge of the choanæ. Snout rounded; canthus rostralis distinct; loreal region slightly concave; nostril much nearer the tip of the snout than the eye; interorbital space as broad as, or broader than, the upper eyelid; tympanum two thirds the width of the eye. Fingers and toes webbed to the disks, which are as large as the tympanum; subarticular tubercles moderate; a small inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the tip of the snout. Smooth above, granular on the belly and under the thighs; a fold above the tympanum; a slight fringe along the forearm and tarsus; tibio-tarsal articulation with a cutaneous flap. Brown above, marbled with darker; hind limbs cross-barred. Male with an internal vocal sac.

Borneo; Philippine Islands.

- | | | |
|----------------------|--------------|-------------------------|
| a. ♂. | Borneo. | A. R. Wallace. } Types. |
| b. ♂. | Borneo. | |
| c-d, e. ♂, ♀, & hgr. | Philippines. | |
| f-g. ♀ & hgr. | Dinagat I. | |
| | | Mr. Everett [C.]. |

31. *Rhacophorus madagascariensis*.

Rhacophorus madagascariensis, *Peters, Mon. Berl. Ac.* 1874, p. 618, pl. 1. f. 3.

Vomerine teeth in a straight line behind the level of the choanæ. Snout rounded; canthus rostralis acute; loreal region concave; nostril halfway between the eye and the tip of the snout; tympanum nearly as large as the eye. Fingers broadly webbed, the membrane between the third and fourth reaching the disks; toes entirely webbed: disks of fingers and toes nearly as large as the tympanum; subarticular tubercles well developed; a smaller inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches beyond the tip of the snout. Skin smooth, granular on the belly and under the thighs; a straight fold above the tympanum to the sides of the body; a fold of skin along the forearm and tarsus, produced into a larger triangular flap on the elbow and on the tibio-tarsal articulation. Reddish brown above, with large irregular grey spots, and speckled all over with black; limbs with very numerous cross bands; hinder side of thighs blackish brown, with closely-set white spots.

Madagascar.

a. b. ♂	Madagascar.	Boucard.
c-d. ♂ ♀		Deyrolle

4. CHIROMANTIS.

Chiromantis, *Peters, Arch. f. Naturg.* 1855, p. 56; *Günth. Cat.* p. 84;
Cope, Nat. Hist. Rev. 1865, p. 116.

Polypedates, sp., *Günth. Proc. Zool. Soc.* 1868, p. 436.

Pupil horizontal. Tongue free and deeply notched behind. Vomerine teeth. Tympanum distinct. Fingers more or less webbed, the two inner opposite to the two outer; toes webbed; tips of fingers and toes dilated. Outer metatarsals separated by web. Omosternum and sternum with a bony style. Terminal phalanges obtuse.

Tropical Africa.

This genus closely approaches the preceding, from which it differs in the curious disposition of the fingers, the two inner being opposable to the two outer, resembling to a certain point the grasping hand of Chameleons. This character, however, is much less developed in *C. rufescens*, which constitutes a link towards *Rhacophorus*.

Synopsis of the Species.

- Outer fingers nearly entirely webbed 1. *rufescens*, p. 92.
 Outer fingers half webbed 2. *werampelina*, p. 93.
 Outer fingers one-third webbed 3. *petersii*, p. 93.

1. *Chiromantis rufescens*. (PLATE IX. fig. 2.)

Polypedates rufescens, *Günth. Proc. Zool. Soc.* 1868, p. 486.

Chiromantis guineensis, *Buchh. & Peters, Mon. Berl. Ac.* 1875, p. 203,
 pl. 1. f. 1.

Vomerine teeth in two oblique groups between the choanæ. Head longer than broad; snout rounded, longer than the greatest orbital diameter, with indistinct canthus rostralis; loreal region not concave; nostril much nearer the tip of the snout than the eye; interorbital space broader than the upper eyelid; tympanum half the width of the eye. Inner fingers webbed at the base, outer ones nearly to the disks; toes moderate, entirely webbed; disks of fingers as large as the tympanum, of toes smaller; subarticular tubercles small; a small inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches between the eye and the tip of the snout. Above with a few small tubercles; beneath granular; a fold above the tympanum. Upper parts brown; a rather indistinct dark cross band between the eyes.

W. Africa.

a. Hgr.

W. Africa.

(Type.)



a. ♂

Uganda.

Ausorge.

b. ♀ Between Butchuma & Majivan Matati
Jegny.

2. *Chiromantis xerampelina*.*Chiromantis xerampelina*, Günth. Cat. p. 85.*Chiromantis xerampelina*, Peters, Arch. f. Naturg. 1855, p. 56.

Vomerine teeth between the choanæ. Head broader than long; snout shorter than, or as long as, the greatest orbital diameter. Inner fingers webbed at the base, outer ones half webbed. Sides with reddish-brown spots and bands. Male without vocal sac.

Mozambique.

3. *Chiromantis petersii*. (PLATE X. fig. 1.)

Vomerine teeth in two oblique groups between the choanæ. Head broader than long; snout rounded, as long as the greatest orbital diameter, with indistinct canthus rostralis; loreal region not concave; nostril equally distant from the eye and the tip of the snout; interorbital space scarcely broader than the upper eyelid; tympanum half the width of the eye. Inner fingers webbed at the base, the outer ones one-third webbed; toes short, nearly entirely webbed; disks very small; subarticular tubercles well developed; a small inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the eye. Skin smooth, granular on the belly and under the thighs; a slight fold above the tympanum. Greyish brown above, indistinctly marbled; a dark-brown stripe on the temporal region. Male with an internal vocal sac.

Interior of E. Africa.

a. ♂.

Interior of E. Africa.

(Mpwapwa)

5. IXALUS*.

Orchestes, Tschudi, Batr. p. 76.*Ixalus*, Dum. & Bibr. viii. p. 523; Günth. Cat. p. 74; Cope, Nat. Hist.

Rev. 1865, p. 116.

? *Leptomantis*, Peters, Mon. Berl. Ac. 1867, p. 32.

Pupil horizontal. Tongue free and deeply notched behind. Vomerine teeth none. Tympanum distinct or hidden. Fingers free or webbed at the base; toes webbed; tips of fingers and toes dilated into regular disks. Outer metatarsals separated by a groove or narrow web. Omosternum and sternum with a bony style. Terminal phalanges obtuse.

East Indies.

* *Ixalus japonicus*, Hallow. Proc. Ac. Philad. 1860, p. 181—Japan.

501
= *Rana macrifus* p. 67.

Synopsis of the Species.

I. Fingers free or very slightly webbed.

A. Tongue with a free, pointed papilla in the anterior part of the median line.

1. Toes more than half webbed.

- A glandular lateral fold; toes nearly entirely webbed, with small disks 1. *opisthorhodus*, p. 95.
 No glandular lateral fold; toes very broadly webbed, with large disks 3. *saxicola*, p. 97.

2. Toes not more than half webbed.

- Tibio-tarsal articulation not reaching beyond the eye; toes webbed at the base 17. *glandulosus*, p. 103.
 Tibio-tarsal articulation reaching beyond the eye; toes half webbed 21. *chalazodes*, p. 105.
 Tibio-tarsal articulation not reaching the eye; toes half webbed 23. *flaviventris*, p. 105.
 Snout subacuminate 24. *signatus*, p. 106.

B. Tongue without papilla.

1. Skin smooth above and beneath; a glandular lateral fold.

- Tympanum indistinct 2. *fuscus*, p. 96.

2. Skin smooth above, or with small tubercles; no glandular lateral fold.

a. Tympanum distinct.

α. Tympanum at least half the width of the eye.

- Tympanum half the width of the eye; toes two-thirds webbed; disks very small . 5. *oxyrhynchus*, p. 97.
 Tympanum half the width of the eye; toes half webbed; disks moderate 7. *leucorhinus*, p. 98.
 Tympanum at least two thirds the width of the eye; toes half webbed 9. *pictus*, p. 99.

β. Tympanum not half the width of the eye.

- Toes fully webbed 6. *kakhiensis*, p. 98.
 Tympanum one third the width of the eye; toes not quite half webbed; a narrow glandular line along the head and back 11. *nasutus*, p. 100.
 Tympanum one third the width of the eye; toes half webbed; no glandular vertebral line 12. *aurifasciatus*, p. 100.
 Tympanum about one third the size of the eye; toes one-fourth webbed; tibio-tarsal articulation reaching the eye . . 18. *lateralis*, p. 103.





- Tympanum about one third the size of the eye; toes less than one-third webbed; tibio-tarsal articulation reaching beyond the eye 19. *punctatus*, p. 104.
- Tympanum about one fourth the size of the eye; toes slightly webbed; tibio-tarsal articulation reaching the tip of the snout 20. *tuberculatus*, p. 104.

b. Tympanum indistinct or quite hidden.

α. Snout pointed.

- Toes nearly entirely webbed 8. *acutirostris*, p. 99.

β. Snout rounded.

- Tibio-tarsal articulation reaching the snout or somewhat beyond; toes webbed at the base; hinder side of thighs coloured 4. *hypomelas*, p. 97.
- Tibio-tarsal articulation reaching beyond the eye; toes two-thirds webbed; hinder side of thighs not coloured .. 13. *femorialis*, p. 101.
- Tibio-tarsal articulation not extending beyond the eye; toes half webbed; hinder side of thighs not coloured.... 14. *beddomii*, p. 101.
- Tibio-tarsal articulation reaching beyond the eye; toes two-thirds webbed; hinder side of thighs coloured 15. *variabilis*, p. 102.
- Tibio-tarsal articulation reaching the eye; toes two-thirds webbed; hinder side of thighs coloured 22. *adspersus*, p. 105.
- Toes barely half webbed; an indistinct tubercle at the base of the fourth toe. 16. *cinerascens*, p. 102.

3. Skin of upper surfaces with large conical warts.

- Heel with a triangular dermal appendage. 10. *schmardanus*, p. 99.

II. Fingers half webbed.

- Tympanum hidden 25. *limaculatus*, p. 106.

1. *Ixalus opisthorhodus*.

? *Limnodytes* ? *phyllophila*, *Jerdon, Journ. As. Soc.* xxii. p. 532, and *Proc. As. Soc.* 1870, p. 85.

Ixalus opisthorhodus, *Günth. Proc. Zool. Soc.* 1868, p. 484, pl. 37. f. 3.

Tongue with a free pointed papilla in the anterior part of the median line. Snout subacuminate, prominent, about as long as the orbital diameter; canthus rostralis angular; loreal region flat, vertical; nostril nearly equally distant from the eye and the tip of

the snout; interorbital space slightly broader than the upper eyelid; tympanum small, hidden. Fingers free, toes nearly entirely webbed; disks small; subarticular tubercles small; a small inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches between the eye and the tip of the snout. Skin of upper parts smooth, with a few short oblique glandular folds; a narrow glandular lateral fold; a fold from the eye to the shoulder; quite smooth beneath. Brownish above, with a few indistinct darker markings; loreal and temporal regions dark brown; limbs cross-barred; beneath immaculate or brown-spotted on the throat and breast; lower surface of hind limbs, hinder sides of thighs, and sometimes hind part of belly beautifully rose-coloured. Male with two internal vocal sacs, the openings of which are very small.

S.W. India.

- a.* ♀. Nilgherries. W. Theobald, Esq. [P.]. (Type of *I. opisthorhodus*.)
b. Several spec., ♂ ♀. Malabar. Col. Beddome [C.].

2. *Ixalus fuscus*. (PLATE X. fig. 3.)

Snout pointed, prominent, generally longer than the orbital diameter; canthus rostralis angular; loreal region flat, vertical; nostril halfway between the eye and the tip of the snout; interorbital space as broad as the upper eyelid; tympanum small, indistinct. Fingers free, toes entirely webbed; disks of fingers and toes rather small; subarticular tubercles small; a small inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches between the eye and the tip of the snout. Skin smooth above and beneath; a narrow glandular lateral fold; a fold from the eye to the shoulder. Brown above; sides of head and body generally darker; limbs cross-barred; hinder side of thighs dark brown, with a more or less accentuated light stripe along the middle; whitish beneath, marbled with brown. Male with two internal vocal sacs, the openings of which are very small. From snout to vent 32 millim.

This species resembles in size and general appearance the preceding one, from which it may be easily distinguished by the absence of a papilla in the middle of the tongue. It does not exhibit the bright pink colour which is seen on the lower surface of the thighs, and sometimes on the belly, in *T. opisthorhodus*.

India.

- a.* Several spec., ♀ & hgr. Travancore. Col. Beddome [C.].
b-e. ♂ ♀. Torocata. Col. Beddome [C.].
f-h. ♂. Anamallays. Col. Beddome [C.].
i. Several spec., ♂ ♀. Sevagherry. Col. Beddome [C.].
k-l. ♀ & hgr. Malabar. Col. Beddome [C.].
m-o. ♂. N. Canara. T. C. Jerdon, Esq. [P.].

2. ♀ Kotagiri, Nilghevies. Henderson.

juv. ♀ Malabar. Boddie.

Ixalus silvaticus, Blgr.
a, senai spec. malabar, Beddome.

f-y. ♀ & hgr. Punduloya, 4000 ft. Green.

3. *Ixalus saxicola*.

Polypedates? *saxicola*, *Jerdon, Journ. As. Soc.* xxii. p. 533.

Tongue with a free, pointed papilla in the anterior part of the median line. Snout subacuminate, as long as the greatest orbital diameter; canthus rostralis angular; loreal region flat, vertical; nostril equally distant from the eye and the tip of the snout; interorbital space as broad as the upper eyelid; tympanum small, hidden. Fingers free, toes very broadly webbed; disks large; subarticular tubercles small; a small inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the tip of the snout or somewhat beyond. Skin smooth above and beneath; a fold from the eye to the shoulder. Olive-brown above, with more or less distinct darker reticulations; limbs cross-barred; throat and breast often marbled with brown. Male with two internal vocal sacs, the openings of which are very small.

Wynaad; Malabar.

- | | | |
|------------------------|----------|---|
| a. Several spec., ♂ ♀. | Malabar. | T. C. Jerdon, Esq. [P.] (As <i>Polyp. saxicola</i> .) |
| b. Many spec., ♂ ♀. | Malabar. | Col. Beddome [C.] |

4. *Ixalus hypomelas*. (PLATE X. fig. 4.)

Ixalus hypomelas, *Günth. Ann. & Mag. N. H.* 1876, vii. p. 376.

Snout obtuse, as long as the greatest orbital diameter; canthus rostralis angular; loreal region flat, nearly vertical; nostril nearer the tip of the snout than the eye; interorbital space a little broader than the upper eyelid; tympanum small, indistinct. Fingers free, toes webbed at the base; disks and subarticular tubercles moderate; a small inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the tip of the snout or somewhat beyond. Skin smooth above, slightly granular beneath. Dark brown above and beneath; a darker stripe on the side of the head and body; belly and under surface of limbs marbled with whitish; often a white line across the breast and along the under surface of the fore limbs, crossing another one along the throat, breast, and belly; sometimes a light vertebral line.

Ceylon.

- | | | | |
|----------------------|---------|------------------------|----------|
| a, b. Many spec.: ♀, | Ceylon. | Col. Beddome [C.] | } Types. |
| hgr., & yg. | | | |
| c-e. ♀. | Ceylon. | W. Ferguson, Esq. [P.] | |

5. *Ixalus oxyrhynchus*. (PLATE X. fig. 5.)

Ixalus oxyrhynchus, *Günth. Ann. & Mag. N. H.* 1872, ix. p. 88.

Snout pointed, longer than the orbital diameter; canthus rostralis angular; loreal region flat, vertical; nostril nearer the tip of the

snout than the eye; interorbital space much broader than the upper eyelid; tympanum distinct, half the width of the eye. Fingers free, toes two-thirds webbed; disks very small; subarticular tubercles well developed; a small inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the tip of the snout or beyond. Skin smooth, granular on the belly and under the thighs. Light brown above, with a large dark spot; loreal and temporal regions blackish brown. Throat dotted with brown.

Ceylon.

a-b. ♀. C. Ceylon. G. H. K. Thwaites, Esq. [P.]. (Types.)

6. *Ixalus kakhienensis*.

Ixalus kakhienensis, Anders. *Anat. Zool. Res. Yunnan*, p. 845, pl. 78. f. 6.

Snout short and moderately pointed; canthus rostralis rounded; tympanum less than half the size of the eye. Fingers free, toes fully webbed, with the exception of the fourth, in which the membrane does not reach its extremity; disks of fingers and toes rather large. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches slightly beyond the tip of the snout. Skin smooth above. Dark olive-black above, paling on the upper surface of the limbs to olive-brown, obscurely transversely banded with blackish brown; lower surfaces spotted and marbled with brown.

Nampoung valley, Yunnan.

7. *Ixalus leucorhinus*.

Ixalus leucorhinus, Günth. *Cat.* p. 75.

Ixalus leucorhinus, Martens, *Nomencl. Rept. Mus. Berol.* p. 36.

— temporalis, Günth. *Rept. Brit. Ind.* p. 434, pl. 26. f. E.

Snout acuminate, a little longer than the orbital diameter; canthus rostralis distinct; loreal region slightly concave; nostril nearer the tip of the snout than the eye; interorbital space broader than the upper eyelid; tympanum distinct, half the width of the eye. Fingers very slightly, toes half webbed; disks and subarticular tubercles moderate; a small inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches between the eye and the tip of the snout. Skin smooth above, granular beneath; a fold from the eye to the shoulder. Brown or olive above; a dark stripe below the canthus rostralis and on the temporal region; sometimes a large hexagonal light spot on the snout; generally a dark vitta between the eyes, and another, arched one on each side of the back; sometimes a light vertebral line or stripe, extending or not along the hind limbs; throat

a. ♀ *Ixalus vittatus*, Blgr.
Bhamo. Fea. (One of the types).

♀ *Ixalus travancoricus*, Blgr.
Bodanaitanur, Travancore. Ferguson.

x. Many species, ♂♀. Punduloya, Ceylon, 4000 ft.
green.
y-aa. ♂♀ Yereand, Shevaroy's. Henderson.

a. c. Ixalus longicrus, Blgr.
Palawan. Everett. (Types)

a-d. ♂♀ Ixalus carinensis, Blgr.
Karin hills. Lea (Types)

a-b. ♂♀ Ixalus asper, Blgr.
Larut, Perak, 3300 ft. Wray. (Types)
c. Blgr. Karin hills. Lea.

generally dotted with brown, sometimes quite brown with an immaculate median line. Male with an internal vocal sac.

Ceylon; India.

<i>a, b, c-d, e.</i> ♀.	Ceylon.	(Types of <i>Ixalus temporalis</i> .)
<i>f, g-k, l.</i> ♂, ♀, hgr., & yg.	Ceylon.	Col. Beddome [C.].
<i>m.</i> Several spec.: ♂, ♀, & hgr.	Ceylon.	W. Ferguson, Esq. [P.].
<i>n.</i> ♂.	C. Ceylon.	G. H. K. Thwaites, Esq. [P.].
<i>o-p.</i> ♀.	S. Ceylon.	
<i>q, r-s.</i> ♀ & hgr.	Malabar.	Col. Beddome [C.].
<i>t-w.</i> Hgr.	N. Canara.	T. C. Jerdon, Esq. [P.].

8. *Ixalus acutirostris*.

Ixalus acutirostris, *Peters, Mon. Berl. Ac.* 1867, p. 32.

Snout pointed; canthus rostralis distinct; nostril nearer the tip of the snout than the eye; tympanum very small, hidden. Toes nearly entirely webbed. Skin smooth, with small glandules above, granular on the belly and under the thighs. Brown above, grey on the sides; an indistinct, brown, triangular spot between the eyes.

Mindanao, Philippines.

9. *Ixalus pictus*.

Ixalus pictus, *Peters, Mon. Berl. Ac.* 1871, p. 580, and *Ann. Mus. Civ. Gen.* iii. 1872, p. 44, pl. 6. f. 3.

Snout pointed, longer than the orbital diameter; canthus rostralis angular; loreal region slightly concave; nostril nearer the tip of the snout than the eye; interorbital space broader than the upper eyelid; tympanum distinct, rather more than two thirds the width of the eye. Fingers free, toes half webbed; disks rather large. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches beyond the tip of the snout. Upper surfaces covered with small warts. Light brown above, with small orange, dark-edged spots.

Sarawak, Borneo.

a. ♀ *Paitan N. Borneo.* *Everett*
b. ♀ *Asas R. Sarawak.* *Hors.*

10. *Ixalus schmardanus*.

? *Ixalus pœcilopleurus*, *Günth. Cat.* p. 75.

Polypedates? *schmardana*, *Kelaart, Prodr. Faun. Zeyl.* ii. p. 22;
Günth. Rept. Brit. Ind. p. 433.

? *Ixalus pœcilopleurus*, *Martens, Nomencl. Rept. Mus. Berol.* p. 36.

? — *schmardæ*, *Peters, Mon. Berl. Ac.* 1860, p. 186.

Snout subtriangular, slightly longer than the orbital diameter; canthus rostralis distinct; loreal region concave; nostril nearer the tip of the snout than the eye; interorbital space as broad as the

upper eyelid; tympanum distinct, half the width of the eye. Fingers free, toes half webbed; disks and subarticular tubercles moderate; a small inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches nearly the tip of the snout. Above with large warts, conical on the eyelids, sides, back, and limbs, confluent into symmetrical lines on the head; a spur-like appendage on the tibio-tarsal articulation; outer edge of forearm and tarsus with a row of large conical tubercles; granular beneath, the granules larger round the lip. Olive above, indistinctly spotted; flanks, belly, lower surfaces of limbs, and hinder side of thighs white, with large dark-brown marblings. Male with an internal vocal sac.

Ceylon.

<i>a, b.</i> ♂ & hgr.	C. Ceylon.	G. H. K. Thwaites, Esq. [P.].
<i>c-e.</i> ♀ & hgr.	Ceylon.	W. H. Holdsworth, Esq. [C.].
<i>f-i.</i> ♂ & yg.	Ceylon.	W. Ferguson, Esq. [P.].

11. *Ixalus nasutus*. (PLATE X. fig. 6.)

Ixalus nasutus, *Günth. Proc. Zool. Soc.* 1868, p. 484.

Snout pointed, a little longer than the orbital diameter; canthus rostralis distinct; loreal region slightly concave; nostril nearer the tip of the snout than the eye; interorbital space as broad as the upper eyelid; tympanum distinct, one third the width of the eye. Fingers free, toes not quite half webbed; disks as large as the tympanum; subarticular tubercles moderate; a small inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches between the eye and the tip of the snout. Above with very small warts or oblique glandular lines; a very narrow, whitish, glandular raised line along the middle of the head and back; beneath granular. Grey above, clouded with darker; loreal and temporal regions blackish; limbs cross-barred; spotted with brown beneath. Male with an internal vocal sac.

Ceylon.

<i>a.</i> ♂	Ceylon.	(Type.)
<i>b-c.</i> ♀.	Ceylon.	Col. Beddome [C.].
<i>d.</i> ♀.	C. Ceylon.	G. H. K. Thwaites, Esq. [C.].

12. *Ixalus aurifasciatus*.

Ixalus aurifasciatus, *Günth. Cat.* p. 74.

Hyla aurifasciata, *Schleg. Abbild.* p. 27, pl. 9. f. 4.

Orchestes aurifasciatus, *Tschudi, Batr.* p. 76.

Ixalus aurifasciatus, *Dum. & Bibr.* p. 523.

Snout rounded, about as long as the orbital diameter; canthus rostralis distinct; loreal region slightly concave; nostril a little nearer the tip of the snout than the eye; interorbital space a little broader than the upper eyelid; tympanum distinct, one third the

R. ♀ *Punduloya*, 4000 ft. green.

Several specs., ♂♀. *Punduloya*, 4000 ft. green.

c-f. ♂♀ Java. Frickstorfer.
 g. ♀ Mt Dulit, Borneo. Hise.
 h. ♂♀ Paka Paka, Kinabalu, 10,000 ft. Everett
 i-k. ♂♀ Great Katuna I? "

Ixalus parvulus, Belg.
 a-b. ♂♀ Karim hills. Lea (types)

x, y-β. ♂♀ Sunduloya, 4,000 ft. Green.

diameter of the eye. Fingers very slightly, toes half webbed; disks as large as the tympanum; subarticular tubercles moderate; a small inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the tip of the snout. Skin with a few small tubercles above, granular on the belly and under the thighs. Brown above, darker marbled; a light cross band between the eyes; legs cross-barred.

Java.

a. ♀.
b. Young.

Java.
Java.

Leyden Museum.

13. *Ixalus femoralis*.

Ixalus femoralis, *Günth. Rept. Brit. Ind.* p. 434, pl. 26. f. D.

— *pulchellus*, *Günth. Ann. & Mag. N. H.* 1872, ix. p. 88.

— *fergusoni*, *Günth. eod. loc.* 1873, xvii. p. 379.

Snout rounded, as long as the orbital diameter; canthus rostralis moderately distinct; loreal region very slightly concave; nostril nearer the tip of the snout than the eye; interorbital space broader than the upper eyelid; tympanum small, hidden. Fingers slightly, toes two-thirds webbed; disks and subarticular tubercles moderate; a very small inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the tip of the snout, or nearly so far. Skin smooth or minutely glandular above; a slight fold from the eye to the shoulder; beneath granular, the granules very large on the belly. Above bluish green, purple, or brownish, immaculate or with black specks, in one specimen with a few large reddish-brown spots; arms colourless, thighs with a stripe of pigment on its upper surface; in one specimen the hinder side of the thighs black-spotted. Male with an internal vocal sac.

Ceylon.

a. ♀.	Ceylon.	(Type of <i>I. femoralis</i> .)
b-c. ♂ ♀.	Ceylon.	
d-f, g, h. ♂ ♀.	Ceylon.	Col. Beddome [C.].
i-l. ♂, ♀, & hgr.	Ceylon.	G. H. K. Thwaites, Esq. [P.].
m. ♀.	Ceylon.	G. H. K. Thwaites, Esq. [P.].
		(Type of <i>I. pulchellus</i> .)
n-p. ♀, hgr., and yg.	Ceylon.	W. Ferguson, Esq. [P.]. (Types of <i>I. fergusoni</i> .)
q-r, v-w. ♂, ♀, hgr., & yg.	Ceylon.	W. Ferguson, Esq. [P.].

14. *Ixalus beddomii*. (PLATE X. fig. 7.)

Ixalus beddomii, *Günth. Proc. Zool. Soc.* 1875, p. 575.

Snout rounded, as long as the orbital diameter; canthus rostralis moderately distinct; loreal region very slightly concave; nostril nearer the tip of the snout than the eye; interorbital space broader than the upper eyelid; tympanum small, hidden. Fingers free, toes

half webbed; disks and subarticular tubercles moderate; a small inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the eye. Skin smooth above, granular beneath; a fold from the eye to the shoulder. Uniform greenish above; thighs colourless, except a greenish stripe along their upper surface. Male with an internal vocal sac.

S.W. India.

- a. Many spec.: ♂, ♀, Atray Mally, Tra- Col. Beddome [C.]. (Types.)
hgr., & yg. vancore (4000 ft.).
b. Several spec.: ♂, Malabar. T. C. Jerdon, Esq. [P.].
♀, & yg.

15. *Ixalus variabilis*.

Ixalus variabilis, Günth. Cat. p. 74, pl. iv. ff. A & B.

Ixalus variabilis, Günth. Rep. Brit. Ind. p. 433, and Proc. Zool. Soc. 1875, p. 573.

? *Phyllomedusa* ? *wynaadensis*, Jerdon, Journ. As. Soc. xxii. p. 533.

Snout rounded, as long as, or rather shorter than, the orbital diameter; canthus rostralis distinct; loreal region slightly concave; nostril nearer the tip of the snout than the eye; interorbital space a little broader than the upper eyelid; tympanum indistinct, about half the width of the eye. Fingers very slightly, toes two-thirds webbed; disks and subarticular tubercles moderate; a small inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches generally between the eye and the tip of the snout. Skin smooth above, granular beneath; a fold from the eye to the shoulder. Above bluish, greenish, brownish, or blackish, uniform, or variously spotted or speckled with darker or lighter; variations of colour endless. Male with an internal vocal sac.

Ceylon; S. India.

- | | | | |
|------------------------|--------------------------|-------------|--------------------------|
| a, b-e, f, g, h, i, k. | ♂, ♀, & hgr. | Ceylon. | { Types. |
| l. | ♀, skeleton. | Ceylon. | |
| m-r. | ♀. | Ceylon. | W. Ferguson, Esq. [P.]. |
| s-u. | Hgr. | Ceylon. | Col. Beddome [C.]. |
| v, w, x. | Many spec.: ♂, ♀, & hgr. | Malabar. | Col. Beddome [C.]. |
| y. | Several spec., hgr. | Sevagherry. | Col. Beddome [C.]. |
| z-η. | Many spec.: ♂, ♀, & hgr. | Pycara. | Col. Beddome [C.]. |
| θ-κ. | ♂ ♀. | —? | T. C. Jerdon, Esq. [P.]. |

16. *Ixalus cinerascens*.

Ixalus cinerascens, Stoliczka, Proc. As. Soc. 1870, p. 275, & 1872, p. 109.

Snout obtuse, shorter than the orbital diameter; tympanum quite indistinct. Fingers quite free, toes barely half webbed; disks well developed; metatarsus with a small inner tubercle and a very indistinct one at the base of the fourth toe. The hind limb being

d. *Artige*. Annullays, 4700 ft. Davison.

Isotria pulchra, Bigr.
a, Many spec. ♂ & ♀. Navantiddy. Beddome.

3. ♂ & ♀. Punduloya, Ceylon. 4000 ft. Green.

f. Agr. Nilgherries.
d. Many spec. Phycara.

Thurstow.
Beddome.

carried forwards along the body, the tibio-tarsal articulation reaches the tip of the snout. Above with a few scattered tubercles; belly and lower side of thighs densely and coarsely tuberculated; a fold from the eye to the shoulder. Above olive ashy, very minutely speckled with dark, paling at the sides; limbs cross-barred; below pale brownish white, somewhat purer on chin and throat, and all over finely speckled and punctated with dark.

Moulmein.

17. *Ixalus glandulosus*.

Ixalus glandulosus, *Jerdon, Journ. As. Soc.* xxii. p. 532; *Günth. Proc. Zool. Soc.* 1875, p. 573.

? *Phyllomedusa* ? *tinniensis*, *Jerdon, l. c.* p. 533.

Ixalus montanus, *Günth. Proc. Zool. Soc.* 1875, p. 574, pl. 67. f. A.

Tongue with a free, pointed papilla on the anterior part of the median line. Snout rounded, as long as the orbital diameter; canthus rostralis distinct; loreal region slightly concave; nostril equally distant from the eye and the tip of the snout; interorbital space broader than the upper eyelid; tympanum small, hidden. Fingers free, toes webbed at the base; disks and subarticular tubercles moderate; a small inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the eye, or not quite so far. Skin of upper surfaces smooth or with small indistinct tubercles; sides generally glandular; lower surfaces granular; a fold from the eye to the shoulder. Dark purplish brown above, uniform, or with indistinct markings, or greyish brown with symmetrical dark-brown markings; beneath immaculate, or more or less spotted. Male with an internal vocal sac.

S. India.

a. ♀.	Travancore.	Col. Beddome [C.].
b, c-g. Hgr.	Malabar.	Col. Beddome [C.].
h, i-m. Many spec.: ♂, ♀, hgr., & yg.	Anamallays.	Col. Beddome [C.].
n-p. ♀.	Kudra Mukl (6000 ft.).	Col. Beddome [C.]. (Types of <i>I. montanus</i> .)
q. Many spec.: ♂, ♀, & hgr.	Kudra Mukl (6000 ft.).	Col. Beddome [C.].
r. ♀.	Nilgherries.	F. Day, Esq. [P.].
s. Several spec.: ♂, ♀, & hgr.	Nilgherries.	T. C. Jerdon, Esq. [P.]. (As <i>Phyllomedusa tinniensis</i> .)
t-x, y. Many spec.: ♂, ♀, & hgr.	—?	W. Theobald, Esq. [P.].

18. *Ixalus lateralis*.

Ixalus lateralis, *Anders. Journ. As. Soc.* 1871, p. 29, and *Anat. Zool. Res. Yunnan*, p. 844, pl. 78. f. 5.

Snout short, rounded, as long as the eye; canthus rostralis angular; tympanum about one third the size of the eye. Fingers

free, toes one-fourth webbed; tips of fingers and toes very feebly dilated. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the eye. Skin smooth, or slightly tubercular above; a fold from the eye over the tympanum to the shoulder; under surface smooth. Uniform brown above; three blackish spots, with a white spot in the centre of some, in linear series along the side: an oblong black spot on the side of the sacrum above the loin; a narrow white line on the middle of the side, between the front and hind limbs; a black band along the supra-tympanal fold; back of thighs black, with a white spot at the end of the band: limbs cross-barred.

Birmah.

19. *Ixalus punctatus*.

Ixalus punctatus, *Anders. Journ. As. Soc.* 1871, p. 27.

Snout rounded, its length a little more than the width between the eyes; canthus rostralis distinct; nostril nearer the tip of the snout than the eye; tympanum distinct, about one third the size of the eye. Fingers free, toes less than one-third webbed; disks of fingers well developed, of toes smaller; a small inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches beyond the eye. Back nearly smooth, with a few scattered minute tubercles on the sacral region; finely tubercular on the sides and on the under surface of the body and thighs; a fold from the eye to the shoulder. Brownish above, as far forwards as the anterior angle of the eye, where the brown abruptly ceases in a straight line, the upper surface of the snout being light olive; upper lip white; a dark-brown band from the snout to the tympanum; sides bluish grey, the minute tubercles dark brown; under surfaces dirty yellowish, the chin, throat, and thorax with scattered brown spots.

Nilgherries.

20. *Ixalus tuberculatus*.

Ixalus tuberculatus, *Anders. Anat. Zool. Res. Yunnan*, p. 845, pl. 78. f. 7.

Snout short, rounded; canthus rostralis feebly developed; nostril much nearer the tip of the snout than the eye; tympanum distinct, about one fourth the size of the eye. Fingers free, toes slightly webbed; disks of fingers large, of toes smaller. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the tip of the snout. Small scattered isolated tubercles on the upper surface and on the sides of the body; finely granular on the belly and under the thighs. Uniform dark olive above; all the small tubercles, as a rule, white; in some specimens a transverse pale band between the eyes and two similar bands behind them; a



large black irregular spot on the groin, and two yellow ones on the sides; limbs cross-barred; chest and belly yellowish, the former with fine brown punctulations.

Kakhyen Hills.

21. *Ixalus chalazodes*.

Ixalus chalazodes, Günth. *Proc. Zool. Soc.* 1875, p. 474, pl. 67. f. B.

Tongue with a free, pointed papilla in the anterior part of the median line. Snout rounded, as long as the orbital diameter; canthus rostralis indistinct; loreal region very slightly concave; nostril nearer the tip of the snout than the eye; interorbital space broader than the upper eyelid; tympanum small, hidden. Fingers free, toes half webbed; disks moderate; subarticular tubercles double under the third and fourth fingers; a small inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches between the eye and the tip of the snout. Skin of upper parts smooth; a few round tubercles on the flanks, on the hind part of the back, and on the metatarsus; a slight fold from the eye to the shoulder; beneath granular. Uniform bluish green above, the round tubercles white.

Travancore.

a. ♀.

Travancore.

Col. Beddome [C.]. (Type.)

22. *Ixalus adspersus*. (PLATE X. fig. 8.)

Ixalus adspersus, Günth. *Ann. & Mag. N. H.* 1872, ix. p. 87.

Snout rounded, as long as the orbital diameter; canthus rostralis distinct; loreal region slightly concave; nostril a little nearer the tip of the snout than the eye; interorbital space a little broader than the upper eyelid; tympanum small, indistinct. Fingers slightly, toes two-thirds webbed; disks and subarticular tubercles well developed; a small inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the eye. Skin smooth above, granular beneath; a fold from the eye to the shoulder. Upper parts dark violet-brown, with numerous round, smaller and larger, yellowish spots; hinder side of thighs marbled with brown; throat and breast marbled with brown. Male with an internal vocal sac, the openings of which are larger than in the other species of *Ixalus*.

Ceylon.

a. ♂.

C. Ceylon.

G. H. K. Thwaites, Esq. [P.].
(Type.)

23. *Ixalus flaviventris*. (PLATE XI. fig. 1.)

Tongue with a free, pointed papilla in the anterior part of the

median line. Snout rounded, as long as the orbital diameter; canthus rostralis distinct; loreal region very slightly concave; nostril nearer the tip of the snout than the eye; interorbital space as broad as the upper eyelid; tympanum small, indistinct. Fingers free, toes half webbed; disks and subarticular tubercles moderate; a very small inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the eye. Skin smooth above, granular beneath; a fold from the eye to the shoulder. Above dark brown with round yellow spots, or brown with dark reticulations or spots; hinder side of thighs dark brown, with round yellow spots; lower surfaces yellow, marbled with brown. Male with an internal vocal sac.

Malabar.

a-b, c, d, e. Many spec.: ♂, ♀, Malabar. Col. Beddome [C.].
hgr., & yg.

24. *Ixalus signatus*. (PLATE XI. fig. 2.)

Tongue with a small papilla in the anterior part of the median line. Snout subacuminate, as long as the orbital diameter; canthus rostralis distinct; loreal region slightly concave; nostril nearer the tip of the snout than the eye; tympanum small, hidden. Fingers free, toes half webbed; disks and subarticular tubercles well developed; a small inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the eye, or somewhat beyond. Skin smooth above, granular beneath. Greyish or brownish above; a dark cross band between the eyes, and a large X-shaped marking on the back; upper lip with a few white spots; limbs cross-barred; hinder side of thighs not coloured; sometimes with brown vermiculations; beneath immaculate. Male with an internal vocal sac.

India.

a. Several spec.: ♂, ♀, & hgr. —? W. Theobald, Esq. [C.].
b-c. ♂ ♀. Malabar. Col. Beddome [C.].

25. *Ixalus bimaculatus*.

Leptomantis bimaculatus, *Peters, Mon. Berl. Ac.* 1837, p. 32.

Snout rounded, scarcely longer than the orbital diameter; canthus rostralis distinct; tympanum one third the width of the eye, covered by the skin. Fingers half webbed, first opposite to the others; toes nearly entirely webbed; disks moderate; a small inner metatarsal tubercle. Smooth above, granular beneath. Violet-brown above, with irregular dark spots and cross bands; limbs cross-barred; a yellowish-white spot beneath the eye, followed by a much smaller one; yellowish white beneath. Male with an internal vocal sac.

Mindanao, Philippines.

a. ♂

Sarawak.

Everett.

d.	♀	Malabar.	Beddome.
e.	♀	Punduloya, Ceylon. 5000 ft.	Green.

Ixalus latopalmatus, Blgr.

v-b.	♀	sgv.	Kina Baloo.	Whitehead
♀			Bongor, N. Borneo.	Everett.

Chirixalus doriae, Blys.
a-c. ♂♀ Karin hills. Sea (Isps)

Phrynoderma asperum, Blys.
a. ♀ Karin hills. Sea (One of the types)

6. CORNUFER.

Cornufer, *Tschudi, Batr.* p. 28; *Dum. & Bibr.* viii. p. 616; *Günth.*

Cat. p. 84; *Cope, Nat. Hist. Rev.* 1865, p. 115.

Hylodes, sp., *A. Dum. Ann. Sc. Nat.* (3) xix. p. 177.

Halophila, *Girard, Proc. Ac. Philad.* vi. 1853, p. 423; *Cope, l. c.*

Platymantis, *Günther, Cat.* p. 93.

Pupil horizontal. Tongue free and deeply notched behind. Vomerine teeth. Tympanum distinct. Fingers free; toes free or slightly webbed, the tips more or less dilated. Outer metatarsals united or separated by a groove. Omosternum and sternum with a bony style. Terminal phalanges T-shaped.

Polynesia; Austro-Malaysia; Philippine Islands; (Java?).

Synopsis of the Species.

I. Tips of fingers dilated into large disks.

- Occiput longitudinally concave; tibio-tarsal articulation reaching beyond the tip of the snout 1. *unicolor*, p. 107.
 Occiput flat; tibio-tarsal articulation not reaching the tip of the snout 2. *dorsalis*, p. 108.
 Occiput flat; tibio-tarsal articulation reaching nearly the tip of the snout; tongue with a conical papilla 3. *guentheri*, p. 108.

II. Tips of fingers slightly dilated.

A. Tibio-tarsal articulation reaching beyond the tip of the snout.

- Tympanum two thirds the width of the eye;
 first finger as long as second 4. *meyeri*, p. 109.
 Tympanum two fifths the width of the eye;
 first finger shorter than second 5. *jagorii*, p. 109.

B. Tibio-tarsal articulation not reaching the tip of the snout.

- Skin with longitudinal folds; first finger extending beyond second 6. *corrugatus*, p. 110.
 Skin with longitudinal folds; first and second fingers equal 7. *punctatus*, p. 110.
 Skin smooth; first finger extending beyond second 8. *vitianus*, p. 110.
 Skin smooth; first and second fingers equal. 9. *unilineatus*, p. 111.

1. Cornufer unicolor.

Cornufer unicolor, *Günth. Cat.* p. 84.

Cornufer unicolor, *Tschudi, Batr.* p. 28; *Dum. & Bibr.* p. 617.

?*Halophila dorsualis*, *Girard, U.S. Expl. Exped., Herp.* p. 56, pl. 4. ff. 12-16.

Vomerine teeth in two groups behind the level of the choanæ. Head much depressed; occiput longitudinally concave, with a longi-

tudinal median crest; canthus rostralis angular; tympanum two thirds the width of the eye. Fingers slender, first as long as second; toes webbed at the base; disks rather large. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches beyond the tip of the snout. A conical tubercle on the upper eyelid; scapulary and temporal regions with small glandules and short folds; a strong fold from the eye above the tympanum to the angle of the mouth; the remainder of the upper surfaces smooth; belly granular. Dark brown above, lighter beneath.

New Guinea.

2. *Cornufer dorsalis*.

Cornufer dorsalis, *Günth. Cat.* p. 84.

Cornufer dorsalis, *A. Dum. Ann. Sc. Nat.* (3) xix. p. 174.

Halophila vitiensis, *Girard, Proc. Ac. Philad.* vi. p. 423.

— *chryseus*, *Cope, Proc. Ac. Philad.* 1862, p. 154.

— *platydactyla*, *Günth. Proc. Zool. Soc.* 1864, p. 49.



Lower surface of hand.



Lower surface of foot.

Vomerine teeth in two oblique groups behind the level of the choanæ. Snout once and one third as long as the orbital diameter; canthus rostralis angular; interorbital space as broad as the upper eyelid; crown flat; tympanum half the width of the eye. Fingers moderate, first shorter than second, the tips dilated into large disks; toes moderate, webbed at the base, with small disks; subarticular tubercles well developed; two metatarsal tubercles. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches in front of the eye. Skin smooth, granular on the belly and under the thighs; a small tubercle on the upper eyelid. Greyish or reddish brown above, with more or less distinct blackish markings on the back; sometimes a light line along the middle of the head and back and along the hind limbs; lower surfaces more or less marbled with brown.

Fiji Islands; (Java?).

a. Hgr.

Fiji Islands.

Voyage of the 'Herald.'

b. Several spec., ♀ & hgr.

Fiji Islands.

(Type of *H. platydactyla*.)

3. *Cornufer guentheri*. (PLATE XI. fig. 3.)

Tongue with a conical papilla in the anterior part of the median line. Vomerine teeth in two oblique groups behind the level of the

- b. *Cornufer guppyi*, Blgr.
♂ ♀ Treasury I? Solomon Is. Guppy.
(Types)
♀ Fars I? Woodford.

♀ Fars I?, Solomons. Woodford.

(*Crinifer johnstoni*, Bly.

a. f. Rio del Rey, W. Africa. Johnston. (Type)

b. f. Mt. Benguet, N. Luzon. Whitehead

hinder edge of the choanæ. Snout once and one third as long as the orbital diameter, with angular canthus rostralis and concave loreal region; interorbital space a little narrower than the upper eyelid; crown flat; tympanum half the diameter of the eye. Fingers moderate, first shorter than second; toes moderate, slightly webbed; disks of fingers large, of toes moderate; subarticular tubercles well developed; a small inner, and a rather indistinct outer metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches nearly the tip of the snout. Skin with short glandular folds above, smooth beneath, except on the lower belly and under the thighs; a fold above the tympanum; upper eyelid with a conical tubercle. Olive above, marbled with darker; a rather indistinct lighter lateral streak beginning behind the eye; limbs cross-barred. From snout to vent 37 millim.

Philippines.

a. ♀.

Dinagat Island.

Mr. Everett [C.].

4. *Cornufer meyeri*. (PLATE XI. fig. 4.)

Platymantis meyeri, *Günth. Proc. Zool. Soc.* 1873, p. 171.

Tongue with a conical papilla in the anterior part of the median line. Vomerine teeth in two oblique groups behind the level of the hinder edge of the choanæ. Snout as long as the orbital diameter, with angular canthus rostralis and concave loreal region; interorbital space a little narrower than the upper eyelid; tympanum two thirds the width of the eye. Fingers moderate, first extending as far as second; toes slender, with a rudimentary web; disks very small; subarticular tubercles much developed; two metatarsal tubercles. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches beyond the tip of the snout. Skin with short glandular folds above, smooth beneath; a strong fold from the eye to the shoulder. Brownish above, marbled with darker, the median part of the back lighter; limbs regularly cross-barred; throat marbled with brown.

Philippines.

a. Hgr. ?

Laguna del Bay.

Dr. A. B. Meyer [C.]. (Type.)

5. *Cornufer jagorii*.

Halophila jagorii, *Peters, Mon. Berl. Ac.* 1863, p. 456.

Vomerine teeth in two oblique series behind the level of the hinder edge of the choanæ. Snout as long as the greatest orbital diameter; tympanum two fifths the width of the eye. First finger a little shorter than second; toes with a rudimentary web; disks small but distinct; subarticular tubercles much developed; two metatarsal tubercles. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches beyond the tip of the snout.

Skin of upper surfaces with granules and distinct glandular longitudinal folds. Dark brown above; whitish, spotted with brown, beneath.

Samar Island.

6. *Cornufer corrugatus*.

Platymantis plicifera, *Günth. Cat.* p. 95, pl. viii. f. B.

Hylodes corrugatus, *A. Dum. Ann. Sc. Nat.* (3) xix. p. 176.

Platymantis corrugata, *Peters, Mon. Berl. Ac.* 1873, p. 611; *Peters & Doria, Ann. Mus. Civ. Gen.* xiii. p. 420.

— *plicifera*, *Günth. Proc. Zool. Soc.* 1877, p. 132.

Vomerine teeth in two oblique groups behind the level of the hinder edge of the choanæ. Snout once and one third the length of the orbital diameter; interorbital space as broad as the upper eyelid; crown flat; tympanum vertically oval, two thirds the width of the eye. Fingers moderate, first extending beyond second; toes moderate, with a rudimentary web; tips of fingers and toes scarcely dilated; subarticular tubercles much developed; two metatarsal tubercles. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the tip of the snout, or nearly so far. Skin granulated, with symmetrical longitudinal folds on the back; a strong fold from the eye to the shoulder. Brownish or olive above, with indistinct darker markings; loreal and temporal regions blackish; yellowish beneath, immaculate or speckled with brown on the throat. Male with two internal vocal sacs.

Philippines; New Guinea; (Java?).

<i>a-b, c-d.</i> ♂, ♀,	Philippines.	(Type of <i>Platymantis plicifera</i> .)
& yg.		
<i>e.</i> ♀.	Laguna del Bay.	Dr. A. B. Meyer [C.].
<i>f.</i> ♂.	Negros.	Dr. A. B. Meyer [C.].
<i>g-l.</i> ♀.	Duke of York Island.	Rev. G. Brown [C.].
<i>m-n, o.</i> ♀.	Mansinam, N. Guinea.	

7. *Cornufer punctatus*.

Platymantis punctata, *Peters & Doria, Ann. Mus. Civ. Gen.* xiii. 1878, p. 420.

Principal characters of *C. corrugatus*, but the two inner fingers of equal length. Brown above; sides of head and upper and under surfaces of limbs dotted with orange; hinder side of thighs vermiculated with orange.

Mount Arfak, New Guinea.

8. *Cornufer vitianus*.

Platymantis vitianus, *Günth. Cat.* p. 93.

Hylodes vitianus, *A. Dum. Ann. Sc. Nat.* (3) xix. p. 177; *Jacq. & Guich. Rept. in Voy. Pôle Sud*, p. 26, pl. i. f. 4.

Halophila heros, *Girard, Proc. Ac. Philad.* vi. p. 423, and *U.S. Expl. Exped., Herp.* p. 55, pl. iv. ff. 1-6.

Vomerine teeth in two oblique groups behind the level of the

p. n. ♀ & hgr. Guadaleana. Woodford.
 n. t. ♀ Putiana, New Georgia.
 v. Hgr. St. Aignan, Louisiade. Thomson.
 r. x. ♂ ♀ & yg. Ferguson I.; D'Entrecasteur group. Meik.

Cornufer solomonis Blgr.
 - f. ♂ ♀ Shortland I. Guppy } (Types)
 h. ♀ Treasury I. "
 ♀ Faro. I. "
 m. ♀ " Woodford.
 p. ♀ & hgr. Guadaleana. "

hinder edge of the choanæ. Snout once and a half as long as the orbital diameter; canthus rostralis rather angular; crown flat;



Lower surface of hand.



Lower surface of foot.

interorbital space as broad as the upper eyelid; tympanum vertically oval, half the width of the eye. Fingers and toes moderate, quite free, with slightly dilated tips and very strong subarticular tubercles; a blunt, oval inner, and a rather indistinct rounded outer metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches in front of the eye. Skin smooth, granular on the belly and under the thighs. Dark brown above, often lighter dotted and marbled; more or less marbled with brown beneath.

Polynesia; (Indian Archipelago?).

a-c. ♀ & yg.	Fiji Islands.	Lords of the Admiralty [P.].
d. ♀, skeleton.	Fiji Islands.	Lords of the Admiralty [P.].
e. ♀	Fiji Islands.	Mus. Econ. Geol.
f. Yg.	Oualan Island.	
g-h, i-l, m. ♀, hgr., & yg.	Fiji Islands.	Voyage of the 'Herald.'

9. *Cornufer unilineatus*.

Platymantis unilineata, Peters, *Mon. Berl. Ac.* 1869, p. 447.

Habit, dentition, and proportion of the limbs as in *C. vitianus*, but the two inner fingers of equal length. Dark brown above, with a few indistinct darker spots, and a line from the tip of the snout to the vent.

Great Viti Island.

7. PHRYNOBATRACHUS.

- Stenorhynchus*, Smith, *Ill. S. Afr., Rept., App.* p. 23; *Günth. Cat.* p. 133.
Phrynobatrachus, *Günth. Proc. Zool. Soc.* 1862, p. 190.
Leptoparius, Peters, *Mon. Berl. Ac.* 1863, p. 452.
Dicroglossus, sp., Cope, *Proc. Ac. Philad.* 1862, p. 341.
Staurois, sp., Cope, *Nat. Hist. Rev.* 1865, p. 117.
Heteroglossa, sp., Cope, *Journ. Ac. Philad.* 1867, vi. p. 193.
Arthroleptis, sp., Peters, *Mon. Berl. Ac.* 1875, p. 210.

Pupil horizontal. Tongue free and deeply notched behind. Vomerine teeth none. Tympanum distinct or hidden. Fingers free; toes

webbed, the tips not or but little dilated. Outer metatarsals separated by web. Omosternum and sternum with a bony style; terminal phalanges simple or slightly dilated.

Africa.

Synopsis of the Species.

- Habit stout; tympanum hidden 1. *natalensis*, p. 112.
 Habit slender; tympanum hidden 2. *plicatus*, p. 112.
 Habit slender; tympanum distinct 3. *acridoides*, p. 113.

1. *Phrynobatrachus natalensis*.

- Stenorhynchus natalensis*, *Günth. Cat.* p. 133.
Stenorhynchus natalensis, *Smith, Ill. S. Afr., Rept., App.* p. 23.
Phrynobatrachus natalensis, *Günth. Proc. Zool. Soc.* 1862, p. 190, & 1864, p. 480; *Bocage, Journ. Sc. Lisb.* 1866, i. p. 54.
Dicroglossus angustirostris, *Cope, Proc. Ac. Philad.* 1862, p. 341.
Arthroleptis natalensis, *Peters, Mon. Berl. Ac.* 1875, p. 210.

Tongue with a free conical papilla in the middle. Habit stout. Head small; snout short, subacuminate, without canthus rostralis; interorbital space narrower than the upper eyelid; tympanum indistinct, half as large as the eye. First finger not extending quite as far as second; toes half webbed; subarticular tubercles well developed; two small tubercles on the metatarsus and another on the middle of the inner edge of the tarsus. The hind limb being carried forwards along the body, the tarso-metatarsal articulation reaches the tip of the snout. Above with irregular flat warts. Olive above, indistinctly marbled with darker; legs cross-barred; whitish beneath, the throat brown-spotted in the female, blackish in the male. Male with an external subgular vocal sac.

South and West Africa.

- | | | | |
|-----------|--------------------|---------------|---|
| a. ♀. | Natal. | <i>Mr. J.</i> | Sir A. Smith [P.] |
| b. ♀. | Natal. | | J. Ayres, Esq. [P.] (Type of <i>Phrynobatrachus natalensis</i> .) |
| c-f. ♂ ♀. | Duque de Bragance. | | Dr. Barboza du Bocage [P.] |

2. *Phrynobatrachus plicatus*.

- Hyperolius plicatus*, *Günth. Cat.* p. 88, pl. vii. f. G.
Staurois plicatus, *Cope, Nat. Hist. Rev.* 1865, p. 117.
Heteroglossa plicata, *Cope, Journ. Ac. Philad.* 1867, vi. p. 198.
Arthroleptis plicata, *Peters, Mon. Berl. Ac.* 1875, p. 210.

Tongue with a free conical papilla in the middle. Habit slender. Head moderate; snout subacuminate, with angular canthus rostralis; interorbital space a little broader than the upper eyelid; tympanum hidden. First finger as long as second; toes two-thirds webbed; tips of fingers and toes dilated into small disks; two small metatarsal tubercles. The hind limb being carried forwards along the

h. ♀ Pretoria, Transvaal. Distant.
l. ♂ Swambo, Brit. C. Africa. Carson.

Phrynobatrachus ranoides, Blys.

a. ♀ Petermaritzburg, Natal. Sweett (Type)

a-d. Ad. egg. Kiduwa, E. Africa. Jackson.
e-h. ♂ ♀ ^N Zanzibar. Fin.

body, the metatarsal tubercles reach far beyond the tip of the snout. Back with a few scattered small tubercles, and with a glandular fold on each side, reaching from the posterior border of the eye to the sacral region, both convergent on the back behind the shoulders. Above brownish, variegated with darker; a dark-brown temporal spot; hinder side of thighs with a dark-brown vitta; throat brownish. Male with an internal subgular vocal sac.

West Africa.

a. ♂.	Coast of Guinea.	(Type.)
b. ♂.	Coast of Guinea.	Sir A. Smith [P.].

3. *Phrynobatrachus acridoides*.

Staurois acridoides, Cope, *Journ. Ac. Philad.* 1867, vi. p. 198.

Habit slender. Snout narrowed, rounded, slightly prominent, with obtuse canthus rostralis; tympanum distinct, half the size of the eye. Toes two-thirds webbed; tips of fingers and toes dilated into small disks; three metatarsal tubercles. The hind limb being carried forwards along the body, the metatarsal tubercles reach beyond the tip of the snout. Skin with weak tubercles above, and two plicæ convergent from orbits, then divergent and terminating behind scapulæ. Above dark greyish olive, with frequently a narrow vertebral band; a dark band on side, on front and hind face of femur, the latter with a pale one above it. Throat and breast brown, white punctate. Limbs cross-barred.

Zanzibar.

8. NYCTIBATRACHUS.

Pupil erect. Tongue free, and deeply notched behind. Vomerine teeth. Tympanum hidden. Fingers free; toes webbed, the tips dilated into small disks. Outer metatarsals separated by web. Omosternum and sternum with a bony style. Terminal phalanges bifurcate.

India.

This new genus is related to *Rana* by the general characters, to *Rhacophorus* by the structure of the distal phalanges, but differs from both by the erect pupil. This appears to be intermediate between the triangular shape, as exhibited by *Bombinator*, and the elliptical exhibited by *Alytes*, *Pelobates*, and others.

1. *Nyctibatrachus pygmæus*. (PLATE XII. fig. 1.)

Rana pygmæa, Günth. *Proc. Zool. Soc.* 1875, p. 568.

Vomerine teeth in two small oblique series behind the level of the choanæ. Habit stout. Snout very short, without canthus

rostralis; eyes very prominent, obliquely directed forwards and upwards; upper eyelid very narrow; interorbital space much broader than the upper eyelid. Fingers moderate, first shorter than second; toes moderate, half webbed, the tips swollen into very small disks; subarticular tubercles not much developed; a small blunt, oval, inner metatarsal tubercle. The hind limb being carried forwards along the body, the metatarsal tubercle reaches the eye or slightly beyond. Skin smooth, with some glandular folds on the head and the front part of the back; a very distinct, oblique one beneath the eye, and a vertical one on the tip of the snout. Dark brown above, with rather indistinct blackish markings; light brown beneath. Male without vocal sac.

S. India.

a. Many spec., ♂ ♀. Anamallays. Col. Beddome [C.]. (Types.)

2. *Nyctibatrachus major*. (PLATE XII. fig. 2.)

Vomerine teeth in two straight series, oblique in the young, much behind the level of the choanæ. Habit stout. Snout very short, without canthus rostralis; eyes very prominent, obliquely directed forwards and upwards; upper eyelid very narrow; interorbital space twice as broad as the upper eyelid. Fingers moderate, first much shorter than second; toes moderate, nearly entirely webbed; tips of fingers and toes swollen into small disks; subarticular tubercles not much developed; a small, elongate, scarcely prominent, inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the eye, or somewhat beyond. Above with very small, closely-set vermiculated folds; a rather indistinct oblique fold beneath the eye; upper eyelids covered with strong tubercles; throat with slight longitudinal folds. Brown above, with rather indistinct darker and lighter markings; brownish beneath, more or less speckled with brown. Male with two internal vocal sacs. From snout to vent 55 millim.

S. India.

a-c. ♂ ♀.	Malabar.	Col. Beddome [C.]. (As <i>Pyrricephalus rufescens</i> .)
d-e, f-g, h-l. ♂ & yg.	Malabar.	Col. Beddome [C.].
m-o. ♂, ♀, & hgr.	Wynaad.	T. C. Jerdon, Esq. [P.].

9. NANNOPHRYS.

Nannophrys, Günth. Proc. Zool. Soc. 1868, p. 482.

Trachycephalus, (non *Tschudi*) Ferguson, Ann. & Mag. N. H. (4) xv. p. 128.

Pupil horizontal. Tongue free and deeply nicked behind. Vomerine teeth. Tympanum distinct. Fingers and toes free, the tips not dilated. Outer metatarsals united. Omosternum cartilaginous;

Nannobatrachus beddomii, Blg.
 a-b. ♂ Malabar. Beddome.
 c. Several spms, ♂ & ♀. Simmler;
 d. " " Malabar. "

sternum a cartilaginous plate. Diapophyses of sacral vertebra slightly dilated. Terminal phalanges simple.

Ceylon.

1. *Nannophrys ceylonensis*. (PLATE XII. fig. 3.)

Nannophrys ceylonensis, *Günth. Proc. Zool. Soc.* 1868, p. 482, and 1875, p. 568.

Trachycephalus ceylanicus, *Ferguson, Ann. & Mag. N. H.* (4) xv. p. 128.

Vomerine teeth in two small groups close together behind the choanæ. Lower jaw with two slight prominences in front. Habit of *Rana kuhlii*. Head broad; snout short, rounded, with angular canthus rostralis; interorbital space narrower than the upper eyelid; in the adult, the derm of the sides of the head and of the forehead becomes involved in the rough cranial ossification; tympanum about half the size of the eye. First finger shorter than second; the difference between the first and second fingers is the same as that between the second and third; subarticular tubercles of fingers and toes not much developed; inner metatarsal tubercle elongate, rather indistinct; no outer tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the tympanum or the eye. Skin slightly tubercular above, smooth beneath; a fold of the skin uniting the posterior edges of the upper eyelids, and extending from the eye, over the tympanum, to the shoulder. Upper parts brown, marbled with darker; upper lip and sides of body and limbs with small light spots; hind limbs cross-barred; whitish beneath, the male's throat brown. Male with two internal vocal sacs.

Ceylon.

<i>a-d.</i> Hgr.	Ceylon.	(Types.)
<i>e-f.</i> ♀.	Ceylon.	Col. Beddome [C.].
<i>g-h.</i> ♂, ♀, & hgr.	Ceylon.	G. H. K. Thwaites, Esq. [P.].

2. *Nannophrys guentheri*. (PLATE XII. fig. 4.)

Vomerine teeth in two indistinct groups behind the choanæ. Lower jaw with slight traces of bony prominences in front. Head rather small, not bony; snout short, rounded, with angular canthus rostralis; interorbital space narrower than the upper eyelid; tympanum not distinctly defined. First finger shorter than second; the difference of length between the first and second fingers is much greater than that between the second and third; tips of fingers pointed; toes with a short, but very distinct web at the base; subarticular tubercles of fingers and toes not much developed; inner metatarsal tubercle elongate, rather indistinct; no outer tubercle. The hind limb being carried forwards along the body the tibio-tarsal articulation reaches the tip of the snout. Skin strongly tubercular above, smooth beneath; a fold of the skin uniting the posterior edges

of the upper eyelids, and extending from the eye, over the tympanum, to the shoulder. Upper parts brown, marbled with darker; upper lip and sides of body and limbs with small light spots; hind limbs cross-barred; uniform whitish beneath. Male with two internal vocal sacs.

The longer hind limbs and the smaller head give this species a much more slender appearance than the preceding; the proportions of the fingers are also important differences between the two species.

Ceylon.

a-b. ♂.

Ceylon.

G. H. K. Thwaites, Esq. [P.].

10. ARTHROLEPTIS.

Arthroleptis, *Smith, Ill. S. Afr., Rept., App.* p. 24; *Günth. Cat.* p. 135; *Cope, Nat. Hist. Rev.* 1865, p. 115.

? *Heteroglossa*, *Hallow. Proc. Ac. Philad.* 1857, p. 64; *Günth. l. c.* p. 26; *Cope, l. c.* p. 117.

Hemimantis, *Peters, Mon. Berl. Ac.* 1863, p. 451; *Cope, l. c.* p. 115.

Pupil horizontal. Tongue heart-shaped, free behind. Vomerine teeth none. Tympanum distinct or hidden. Fingers free; toes nearly free, with blunt or slightly dilated tips. Outer metatarsals united. Omosternum and sternum with a bony style. Terminal phalanges simple.

Africa.

Synopsis of the Species.

I. Toes very slightly webbed, nearly free.

A. Skin smooth above.

A single metatarsal tubercle 1. *wahlbergii*, p. 117.

A single metatarsal tubercle; third finger
twice as long as second 3. *macrodactylus*, p. 117.

Two metatarsal tubercles; tympanum
hidden 5. *boettgeri*, p. 118.

A tarsal and two metatarsal tubercles . . . 4. *dispar*, p. 117.

B. Skin with tubercles or warts above.

A single metatarsal tubercle; a fold along
the sides of the body 2. *pæcilonotus*, p. 117.

Three metatarsal tubercles; a spine-like
dermal appendage on the hind part of
each eyelid 6. *calcaratus*, p. 118.

Head distinctly broader than the body . . . 7. *horridus*, p. 118.

II. Toes very distinctly webbed.

Head nearly as long as the body; belly
smooth 8. *africanus*, p. 119.

a. ♀ Batrachylodes vertebralis, Blgr.
Fars I.^o, Solomons. Woodford (Type).

Arthroleptis minutus, Blys.

a. ♂ Durru, W. Somaliland. D. Smith
(Type)

b. ♀ Petermaritzburg. Duckett.

a ♀ Gold Coast. Burton & Cameron

b. ? ♀ Zomba, Brit. E. Africa. Johnston

1. *Arthroleptis wahlbergii*.

Arthroleptis wahlbergii, *Günth. Cat.* p. 135.

Arthroleptis wahlbergii, *Smith, Ill. S. Afr., Rept., App.* p. 24; *Peters, Mon. Berl. Ac.* 1870, p. 115, pl. 1. f. 2.

Head moderate; tympanum distinct, half the width of the eye. Third finger once and a half the length of second; disks of fingers and toes very small; a single, inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the eye. Skin smooth, subgranular on the abdomen and under the thighs. Upper surfaces ash-grey, variegated with brown.

S. Africa.

a. Very bad state.

Cape of Good Hope.

Sir A. Smith [P.].

2. *Arthroleptis pœcilonotus*.

Arthroleptis pœcilonotus, *Peters, Mon. Berl. Ac.* 1863, p. 446.

Head moderate; tympanum distinct, hardly half the width of the eye. Third finger not twice as long as second; disks of fingers and toes very slight; a single, inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches in front of the eye. Skin of the back with very small granules; a fold along the sides of the body and another across the chest. Brown above, variegated with darker.

Boutry, coast of Guinea.

3. *Arthroleptis macrodactylus*. (PLATE XI. fig. 5.)

Head moderate; tympanum distinct, half the width of the eye. Third finger very long, twice as long as second; disks of fingers and toes very slight; a single, inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the eye. Skin smooth, granular on the lower belly. Uniform brown above; a dark streak over the tympanum. From snout to vent 25 millim.

Gaboon.

a. Hgr.?

Gaboon.

H. Ansell, Esq. [P.].

4. *Arthroleptis dispar*.

Arthroleptis dispar, *Peters, Mon. Berl. Ac.* 1870, p. 649, pl. 2. f. 3, & 1875, p. 210, pl. 3. f. 1-3.

Head moderate; tympanum distinct, hardly half the width of the eye. Third finger once and a half the length of second; disks of fingers and toes very distinct; a tarsal and two metatarsal tubercles. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches in front of the eye. Skin smooth. Dark brown

above, or light with symmetrical dark markings, with or without a light vertebral line and another along the hind part of the thighs; limbs cross-barred.

W. Africa.

5. *Arthroleptis boettgeri*. (PLATE XI. fig. 6.)

Head moderate; tympanum hidden. Third finger scarcely more than once and a half the length of second; tips of fingers and toes not dilated; two metatarsal tubercles. The hind limb being carried forwards along the body, the tibio-tarsal articulation marks the shoulder. Skin perfectly smooth; a curved fold from the eye to the shoulder. Olive above; a light line from below the eye to the shoulder; in some specimens, a light vertebral line and a broad light stripe from the scapular region to the groin; transversely dilated dark spots on the legs; belly generally with round black spots, inferior surface of limbs with dark vermiculations. Male with a large external subgular vocal sac. From snout to vent 19 millim.

Kaffraria.

a-d. ♂.

~~Vleis~~, Kaffraria.

J. P.

F. M. Weale, Esq. [P.].

This species is named in honour of Dr. O. Boettger, of Frankfurt a. M.

6. *Arthroleptis calcaratus*.

Hemimantis calcaratus, *Peters, Mon. Berl. Ac.* 1863, p. 452.

Arthroleptis calcaratus, *Peters, Mon. Berl. Ac.* 1875, p. 210.

Head moderate; tympanum hidden, one third the width of the eye. Third finger once and a half the length of second; fingers and toes with distinct disks; three metatarsal tubercles. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches nearly the tip of the snout. Upper surface of body with a few flat warts; a spine-line dermal appendage on the hind part of each eyelid; lower surfaces quite smooth. Brown above, black-spotted; sometimes a broad yellow vertebral line.

Boutry, coast of Guinea.

7. *Arthroleptis horridus*.

Hemimantis horrida, *Boettger, Zool. Anz.* 1880, p. 282.

Head large, distinctly broader than the body; tympanum slightly distinct, one fourth the size of the orbit. Fingers and toes with distinct disks, those of the latter smaller; a single metatarsal tubercle. Skin tubercular. Grey above; three transverse black stripes on the back; limbs cross-barred; sides of belly black, with a few large white spots.

Nossi Bé, Madagascar.

♀ Port Elizabeth.

Leslie.



8. *Arthroleptis* ? *africanus*.

Heteroglossa africana, *Günth. Cat.* p. 26.

Heteroglossa africana, *Hallow. Proc. Ac. Philad.* 1857, p. 64; *Cope, Proc. Ac. Philad.* 1862, p. 343.

Head nearly as long as the body; tympanum distinct. Toes very distinctly webbed; disks of fingers and toes very small. Skin smooth above and beneath. Dark brown or chocolate above, mingled to a slight extent with ash; posterior extremities cross-barred; abdomen ash-coloured; chin and throat chocolate-spotted; under surface of extremities blackish, mingled with ash.

Gaboon.

11. *RAPPIA**.

Eucnemis, sp., *Tschudi, Batr.* p. 35; *Dum. & Bibr.* viii. p. 525.

Hyperolius, sp., (*non Gray*) *Rapp, Arch. f. Naturg.* 1842, p. 289; *Günth. Cat.* p. 85; *Cope, Nat. Hist. Rev.* 1865, p. 116.

Rappia, sp., *Günth. Zool. Rec.* i. p. 130.

Pupil horizontal. Tongue heart-shaped, free behind. Vomerine teeth none. Tympanum distinct or hidden. Fingers and toes more or less webbed, the tips dilated into large disks. Outer metatarsals united. Omosternum and sternum with a bony style. Terminal phalanges obtuse.

Tropical Africa.

This genus differs from *Ixalus*, which it represents in the Æthiopian Region, by the absence of a groove or web between the outer metatarsals and by the generally less deep emargination of the tongue. The species hitherto referred to this genus show two different forms of pupil; and I have, on account of this, split them into two genera, maintaining under *Rappia* those species only that have the pupil transverse; those with erect pupil I unite under *Megalixalus*.

A considerable number of species have been established upon coloration only. But coloration is not of specific importance in Frogs, and I therefore have united all those forms that are not distinguished by any structural character.

The name *Hyperolius*, given by Rapp on account of *Eucnemis* being preoccupied, has been changed by Dr. Günther into *Rappia*, Gray having several years before Rapp named a genus of Frogs *Uperoleia*, the correct spelling of which would be *Hyperolius*.

* 1. *Eucnemis viriflavus*, Dum. & Bibr. p. 525.—Abyssinia.

2. *Hyperolius flavoviridis*, Peters, *Arch. f. Naturg.* 1855, p. 56.—Mozambique.

3. *Hyperolius tettensis*, Peters, *l. c.*—Mozambique.

4. *Eucnemis betsileo*, Grandid. *Ann. Sc. Nat. (5)* xv. 1872.—Madagascar.

5. *Eucnemis antanosi*, Grandid. *l. c.*—Madagascar.

The shape of the pupil not having been noticed by the authors, these species may as well belong to the following genus as to *Rappia*.

Synopsis of the Species.

I. Tympanum hidden.

A. Fingers two-thirds webbed 9. *ocellata*, p. 123.

B. Fingers one-third or half webbed.

1. *horstockii*, p. 120. 2. *renifer*, p. 120. 3. *fulvovittata*, p. 121.
 5. *marmorata*, p. 121. 6. *argus*, p. 122. 7. *salinæ*, p. 123.
 8. *lagoensis*, p. 123. 11. *fuscigula*, p. 124. 14. *tuberilinguis*, p. 125.
 16. *guttulata*, p. 125. 17. *bocagii*, p. 126. 21. *microps*, p. 127.
 22. *nasuta*, p. 127.

C. Fingers not one-third webbed.

4. *tristis*, p. 121. 10. *concolor*, p. 124. 18. *rutenbergii*, p. 126.
 19. *cinctiventris*, p. 126. 20. *pusilla*, p. 127.

II. Tympanum distinct.

12. *idæ*, p. 124. 13. *steindachneri*, p. 125. 15. *reticulata*, p. 125.

1. *Rappia horstockii*.*Hyperolius horstockii*, *Günth. Cat.* p. 85.*Hyla horstockii*, *Schleg. Abbild.* p. 24.*Eucnemis horstockii*, *Tschudi, Batr.* p. 76; *Dum. & Bibr.* p. 529.*Hyperolius horstockii*, *Steind. Novara, Amph.* p. 50.

Snout rounded, as long as or a little longer than the orbital diameter; tympanum hidden. Fingers half webbed; toes two-thirds webbed. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches between the eye and the tip of the snout. Skin smooth, granular on the belly and under the thighs; no strong fold across the chest. Greyish or brown above; a dark, above light-edged, band from the tip of the snout through the eye along each side of the body; thighs not coloured. Male with a subgular vocal sac and an adhesive disk covering the throat.

S. Africa; Madagascar.

a, b. ♂ ♀.

S. Africa.

Sir J. Richardson [P.].

c. ♀.

Cape of Good Hope.

d. ♀.

Peri Bush.

H. Trevelyan, Esq. [P.].

~~*e.* ♀.~~~~S. E. Betileo, Madagascar. = *R. betileo*~~*f.* ♀.

—?

2. *Rappia renifer*.

Hyperolius renifer, *Boettger, Zool. Anz.* 1881, p. 46, and *Abh. Ver. Brem.* vii. p. 187.

Head broad, broader than the body; snout obtuse; interorbital space grooved; tympanum hidden. Fingers one-third, toes three-

g. Agr. Lake (Ialloraka', Shea. Ginea Mus.

	<u>Ruppia bethiles</u> grand.	
a. ♀	S. C. Bethiles.	D. Cowan
b. d. e. f. ♀	C. Bethiles.	"
g. ♀	S. C. Bethiles.	
h. ♀	Madagascar.	Peracca.
i. m. ♂♀	Fianarantsoa.	Major.



fourths webbed. Skin smooth above. Dark olive-green above; an indistinct blackish line from the tip of the snout through the eye to the temporal region; a rather ill-defined whitish streak from the eye to the groin; thighs not coloured. Male with a kidney-shaped adhesive gular disk.

Madagascar.

3. *Rappia fulvovittata*.

Hyperolius fulvovittatus, Cope, *Proc. Ac. Philad.* 1863, p. 517.

— *quinquevittatus*, Bocage, *Jorn. Sc. Lisb.* 1866, i. p. 77.

Rappia fulvovittata, Günth. *Proc. Zool. Soc.* 1868, p. 479.

? *Hyperolius fimbriolatus*, Buchh. & Peters, *Mon. Berl. Ac.* 1876, p. 121.

Hyperolius vittiger, Peters, *Mon. Berl. Ac.* 1876, p. 122.

Snout rounded, as long as the orbital diameter; tympanum hidden. Fingers one-third, toes two-thirds webbed. The hind limb being carried forwards along the body, the tibio-tarsal articulation does not reach the eye. Body slender. Skin smooth, granular on the belly; no strong fold across the chest. Light yellowish brown above; a black band from the tip of the snout through the eye along the side of the body; two others along the middle of the back, meeting between the eyes; thighs coloured.

W. Africa.

a. ♀. Duque de Bragance. Prof. Barboza du Bocage [P.].

4. *Rappia tristis*.

Hyperolius tristis, Bocage, *Jorn. Sc. Lisb.* 1866, i. p. 76.

Snout rather long, rounded; tympanum hidden. Fingers webbed at the base; toes nearly entirely webbed. Skin smooth above, with a few folds along the back, granular on the belly and under the thighs. Dark greenish brown above, covered with confluent black dots; upper surface of thighs yellowish grey, speckled with black; a broad black line along the canthus rostralis and through the eye to the shoulder.

Duque de Bragance, Angola.

5. *Rappia marmorata*.

Hyperolius viridiflavus, (non D. & B.) Günth. *Cat.* p. 85.

— *marmoratus*, Günth. *l. c.* p. 85.

— *parallelus*, Günth. *l. c.* p. 86, pl. viii. f. A.

— *tæniatus*, Günth. *l. c.* p. 87.

— *marginatus*, Günth. *l. c.* p. 87.

Hyperolius marmoratus, Rapp, *Arch. f. Naturg.* 1842, p. 289, t. 6; Smith, *Ill. S. Afr., Rept.*, App. p. 26; Bocage, *Jorn. Sc. Lisb.* 1866, i. p. 74; Steind. Novara, *Amph.* p. 50, pl. 2. f. 19 & 20.

— *tæniatus*, Peters, *Arch. f. Naturg.* 1855, p. 57.

— *marginatus*, Peters, *l. c.*

Hyperolius insignis, Bocage, *Proc. Zool. Soc.* 1867, p. 844, f. 2.

— *toulsonii*, Bocage, *l. c.* p. 845, f. 3.

Rappia tæniata, Günth. *Proc. Zool. Soc.* 1868, p. 479.

— *insignis*, Günth. *l. c.*

— *marginata*, Günth. *l. c.*

Hyperolius huillensis, Bocage, *Jorn. Sc. Lisb.* xiv. p. 225.

♀ — *picturatus*, (Schleg.) Peters, *Mon. Berl. Ac.* 1875, p. 206, pl. 2. f. 2.

— *nitidulus*, Buchh. & Peters, *Mon. Berl. Ac.* 1875, p. 209, pl. 3. f. 4.

Snout rounded, as long as the orbital diameter; tympanum hidden. Fingers nearly half webbed, toes entirely webbed. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the eye. Skin smooth, slightly granular on the belly and under the thighs; a strong fold across the chest in females. Coloration subject to infinite variation; thighs not coloured; upper surfaces dark purplish brown or vinaceous red, spotted or reticulated with whitish, or with three white parallel bands, or whitish with irregular blackish spots or longitudinal bands, &c. Male with a subgular vocal sac and an adhesive disk covering the throat.

Tropical Africa.

a. ♀ (uniform light bluish grey). Abyssinia.

b-d. ♂ ♀. Zambesi Expedition. Dr. Livingstone [P.].

e-f, g-i. ♂, ♀, & hgr. Zambesi Expedition. Sir J. Kirk [P.].

k-l. ♀. E. Africa. Dr. Günther [P.].

m. ♀. Natal. T. Ayres [C.].

n, o-p. Many spec., Natal. Sir A. Smith [P.].

q-t. ♂ ♀. Cape of Good Hope. Rev. H. H. Methuen [P.].

u. ♀. Cape of Good Hope. (Type of *Hyperolius parallelus*.)

v. ♂. River Donda.

w. ♀. Benguela. Prof. Barboza du Bocage [P.].
(As typical of *Hyperolius insignis*.)

x-z. ♀. Duque de Bragance, Angola. Prof. Barboza du Bocage [P.].

a-δ. ♀. Huilla, Angola. Dr. Welwitsch [P.].

ε-η. ♀ & hgr. Ambris, Angola. (Types of *Hyperolius parallelus*.)

θ. Hgr. Gambia.

ι, κ, λ-ξ. ♂ ♀. W. Africa.

ο. ♀. W. Africa. Mr. Fraser [C.].

π. ♀. W. Africa. Prof. Barboza du Bocage [P.].
(As typical of *Hyperolius huillensis*.)

6. *Rappia argus*.

Hyperolius argus, Günth. *Cat.* p. 87.

Hyperolius argus, Peters, *Arch. f. Naturg.* 1855, p. 57.

Rappia argus, Günth. *Proc. Zool. Soc.* 1868, p. 479.

Snout rounded, as long as the orbital diameter; tympanum hidden. Fingers half webbed; toes entirely webbed. The hind

p.	♀	Coast of Angolar	Sierra.
6	♀	Delagoa Bay.	Monteiro.
7-8	♀ egg.	Lamu, N. of Zanzibar.	Jackson.
X.	♂	Sette Cuma, Gaboon.	Gerrard.
w.	♀	Taita, E. Africa.	Wray.
x.	♂	Port Elizabeth.	Leslie.
22	♀	Many spec., ♂♀ eggs. Waken, Congo.	Mr. Bentley.
46	♂	" "	
52	♂	" "	S. African Mus.
at. Lee.	♀	Lake N'Gami.	
57	♂	Blantyre Mission Station.	Grant.
		Mouth of the Niger.	Millson.

d. ♀ Rabai Hills, Mombas. Taylor.

Rappia sordida, Fischer.
a-b. ♂♀ Cameron. Fischer. (Types)
c. ♀ West Africa. Mr. M. Dowell

Rappia burtonii, Blgs.
a. ♀ Ancober River, Gold Coast. Burton
 & Cameron (Type)

limb being carried forwards along the body, the tibio-tarsal articulation reaches the eye. Skin smooth, granular on the belly; no strong fold across the chest. Light brown above; a white, black-edged streak from the upper eyelid to the tip of the snout, sometimes continued along the side of the body; back with large white, black-edged, rounded spots, or small black spots; thighs not coloured.

E. Africa.

a. ♀. Zambesi Expedition.
b-c. ♀. Zambesi River.

Sir J. Kirk [P.].

7. *Rappia salinæ*.

Eucnemis salinæ, *Bianc. Spec. Zool. Mossamb., Rept.* p. 24, t. 5. f. 2.
Rappia salinæ, *Günth. Proc. Zool. Soc.* 1868, p. 479.

Snout rounded, as long as the orbital diameter; tympanum hidden. Fingers half webbed; toes nearly entirely webbed. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches in front of the eye. Skin smooth, granular on the belly; no strong fold across the chest. Uniform greyish brown above. Male with a subgular vocal sac and an adhesive disk covering the throat.

E. Africa.

a, b, c. ♂ ♀. Zambesi Expedition.

Dr. Livingstone [P.].

8. *Rappia lagoensis*.

Rappia lagoensis, *Günth. Proc. Zool. Soc.* 1868, p. 487, pl. 40. f. 2.
Hyperolius lagoensis, *Peters, Mon. Berl. Ac.* 1875, p. 207.

Snout rounded, as long as the orbital diameter; tympanum hidden. Fingers half webbed; toes entirely webbed. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches between the eye and the tip of the snout. Skin smooth, granular on the belly; no strong fold across the chest. Brownish above, coarsely reticulated with blackish; a black streak along the canthus rostralis; upper surface of limbs spotted with black.

W. Africa.

a. ♀. Lagos.
b. ♀. W. Africa.

H. T. Ussher, Esq. [C.]. } Types.

9. *Rappia ocellata*.

Hyperolius ocellatus, *Günth. Cat.* p. 88, pl. vii. f. B.

Snout rounded, as long as the orbital diameter; tympanum hidden. Fingers two-thirds webbed; toes entirely webbed. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the tip of the snout. Skin smooth, granular on

the belly; no strong fold across the chest. Light reddish brown above, with small rounded black spots; sides dark brown, with white spots; a narrow brown streak along the upper side of the thighs.

W. Africa.

<i>a.</i> ♀.	Fernando Po. {	Types.
<i>b.</i> Hgr.	Angola. }	

10. *Rappia concolor*.

Hyperolius modestus, *Günth. Cat.* p. 88.

Ixalus concolor, *Hallow. Proc. Ac. Philad.* 1844, p. 60.

Hyperolius concolor, *Cope, eod. loc.* 1862, p. 342; *Peters, Mon. Berl. Ac.* 1875, p. 208.

? *Hyperolius coccotis*, *Cope, l. c.* p. 342.

Snout subtriangular, a little longer than the greatest orbital diameter; tympanum hidden. Fingers webbed at the base; toes two-thirds webbed. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the eye. Skin smooth, granular on the belly and under the thighs; no strong fold across the chest. Greenish above, uniform; thighs colourless, except a narrow, rather indistinct, whitish vitta along their upper surface.

Tropical Africa.

<i>a.</i> ♀.	Gold Coast,	(Type of <i>Hyperolius modestus</i> .)
<i>b.</i> ♀.	Shiré Valley, Zambesi.	
<i>c-d.</i> ♀.	Zambesi Expedition.	Sir J. Kirk [P.].
<i>e.</i> ♀.	Quellimane.	Sir J. Kirk [P.].

11. *Rappia fuscigula*.

Hyperolius fuscigula, *Bocage, Journ. Sc. Lisb.* 1866, i. p. 76.

Rappia fuscigula, *Günth. Proc. Zool. Soc.* 1868, p. 479.

Hyperolius olivaceus, *Buchh. & Peters, Mon. Berl. Ac.* 1876, p. 120.

Snout rounded, as long as the orbital diameter; tympanum hidden. Fingers one-third, toes three-fourths webbed. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the eye. Skin smooth, granular on the belly and under the thighs; no strong fold across the chest. Uniform bluish green above; a blackish line along the flanks; upper side of thighs blackish, with a light median stripe.

W. Africa.

<i>a.</i> ♀.	W. Africa.	J. C. Salmon, Esq. [P.].
<i>b.</i> ♀.	W. Africa.	
<i>c-d, e.</i> ♀.	Eloby District, Gaboon.	H. Ansell, Esq. [P.].

12. *Rappia idæ*.

Hyperolius idæ, *Steind. Novara, Amph.* p. 51, pl. 5. f. 10.

Snout rounded, as long as the orbital diameter; tympanum

f. Hgr. Njemo Indogo, E. Africa. Gregory.

f. ♂ Lake (iaialakā, Iha). Genoa Mus.

b. ♀ Wathen, R. Congo. Mrs. Bentley.

distinct. Fingers one-third, toes two-thirds webbed. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the eye. Green above; sides of the body and upper sides of thighs with large white, dark brown-edged spots.

Madagascar.

13. *Rappia steindachneri*.

Hyperolius steindachneri, *Bocage, Journ. Sc. Lisb.* 1866, i. p. 75.

Rappia steindachneri, *Günth. Proc. Zool. Soc.* 1868, p. 479.

Snout rounded, as long as the orbital diameter; tympanum slightly distinct. Fingers half webbed, toes entirely webbed. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the eye. Skin smooth, granular on the belly and under the thighs; no strong fold across the chest. Upper surface of head and back pinkish orange; sides vinaceous red; lower surfaces, flanks, and upper surface of thighs dark purplish brown, with round white spots.

W. Africa.

a. ♀.

Old Calabar.

14. *Rappia tuberilinguis*.

Hyperolius tuberilinguis, (*Sunder.*) *Smith, Ill. S. Afr., Rept., App.* p. 26; *Peters, Mon. Berl. Ac.* 1870, p. 115, pl. 1. f. 3.

Tongue with two conical papillæ in front. Snout rounded, as long as the orbital diameter; tympanum hidden. Fingers one-third, toes two-thirds webbed. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the tip of the snout. Skin smooth above. Above immaculate.

Kaffraria.

15. *Rappia reticulata*.

Hyperolius reticulatus, *Günth. Proc. Zool. Soc.* 1864, p. 482, pl. 33.

Rappia reticulata, *Günth. Proc. Zool. Soc.* 1868, p. 480.

Resembles very much *R. guttulata*, but the tympanum is visible. Upper parts densely covered with round white spots, separated from one another by the brown ground-colour, which appears as a regular network; thighs not coloured.

—?

a. ♀.

—?

(Type.)

16. *Rappia guttulata*.

Hyperolius guttulatus, *Günth. Cat.* p. 86, pl. vii. f. A.

Head much depressed; snout rounded, a little longer than the orbital diameter; tympanum hidden. Fingers half webbed; toes

entirely webbed. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches in front of the eye. Skin smooth, slightly granular on the belly; no strong fold across the chest. Upper parts brown, finely white-dotted; thighs not coloured.

—?

a, b-c. ♀.

Africa.

(Types.)

17. *Rappia? bocagii*.

Hyperolius bocagei, Steind. Novara, *Amph.* p. 51, pl. 5. f. 11.

Head much depressed: snout rounded, as long as the orbital diameter; tympanum hidden. Fingers half webbed; toes entirely webbed. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the tip of the snout. Above with a few flat warts; throat and belly granular. Light brown above, minutely speckled with blackish.

Angola.

18. *Rappia rutenbergii*.

Hyperolius rutenbergi, Boettg. Zool. Anz. 1881, p. 47, and *Abh. Ver. Brem.* vii. p. 189.

Snout short, subacuminate; tympanum hidden. Fingers one-fourth, toes half webbed. Skin smooth, granular on the belly. Blackish grey above, with five longitudinal white stripes; thighs not coloured.

Madagascar.

19. *Rappia cinctiventris*.

Hyperolius cinctiventris, Cope, *Proc. Ac. Philad.* 1862, p. 342; Boettg. *Abhandl. Senckenb. Ges.* xii. p. 112.

— *citrinus*, Günth. *Proc. Zool. Soc.* 1864, p. 311, pl. 27. f. 2; Peters, *Mon. Berl. Ac.* 1866, p. 891.

— *granulosus*, Peters, *l. c.*

Rappia citrina, Günth. *Proc. Zool. Soc.* 1868, p. 481.

Hyperolius glandicolor, Peters, *Mon. Berl. Ac.* 1878, p. 208, pl. 2. f. 9.

Snout rounded, as long as the orbital diameter; tympanum hidden. Fingers webbed at the base; toes two-thirds webbed. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches in front of the eye. Upper parts with small scattered tubercles; throat tubercular; belly and under surface of thighs granular; a more or less distinct fold surrounding the median abdominal region. Uniform yellowish above; thighs, under surface of limbs, and sides of belly brown or blackish. Male with a subgular vocal sac, but no adhesive disk.

Tropical Africa.

a. ♂. Senegal.

b. ♂. Zambesi Expedition.

c. ♂. King-Williamstown.

Mr. Whitfield [P.]. } Types of *H. ci-*
Dr. Livingstone [P.]. } *trinus*.
H. Trevelyan, Esq. [P.]. }

d-e.	♂	Urambo, C. Africa.	Gerrard.
f.	♂	E. Africa.	Kirk.
g.	♀	Wadelai.	Emin Pasha.
h.		Many spec. Zomba, Brit. E. Africa.	Johnston.
i-l.	♂ ♀	vs. Urambo, " " "	Carson.

a. Hgr. Brass, Mouths of the Niger. Linna

b. ♂ Zomba, Brit. E. Africa. Johnston.
c. ♂ Swambo, " " " Carson
d. Hgr. Mashonaland. " Marshal.

20. *Rappia pusilla*.

Crumenifera pusilla, Cope, *Proc. Ac. Philad.* 1862, p. 343.

Snout short, truncate; tympanum hidden. Fingers one-fourth, toes three-fourths webbed. Skin smooth, transversely areolate on the belly. Pale straw-colour; a faint brown line on the canthus rostralis. Male with a large vocal vesicle, which is prolonged posteriorly, and bound beneath by a median frenum, on each side of which a plicate pouch projects deeply into the vesicular cavity.

Umvoti, W. Africa.

21. *Rappia microps*.

? *Hyperolius sugillatus*, Cope, *Proc. Ac. Philad.* 1862, p. 342.

Hyperolius microps, Günth. *Proc. Zool. Soc.* 1864, p. 311, pl. 27. f. 3; Bocage, *Jorn. Sc. Lisb.* 1866, i. p. 75.

? *Hyperolius heuglini*, Steind. *Verh. zool.-bot. Ges. Wien*, 1864, p. 244, pl. 15. f. 4.

Rappia microps, Günth. *Proc. Zool. Soc.* 1868, p. 481.

Snout rounded, a little longer than the orbital diameter; tympanum hidden. Fingers one-third, toes two-thirds webbed. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches in front of the eye. Skin smooth, slightly granular on the belly; a strong fold across the chest. Light brown above; a white line along the canthus rostralis, continued behind the eye along the anterior half of the length of the body; its rostral portion with a dark-brown inferior margin; a few minute dark-brown dots on the head. Male with a subgular vocal sac and an adhesive disk covering the throat.

E. Africa.

a. ♂.

—?

Dr. Günther [P.].

b. ♀.

Zambesi Expedition.

Sir J. Kirk [C.]. } Types.

22. *Rappia nasuta*.

Hyperolius nasutus, Günth. *Proc. Zool. Soc.* 1864, p. 482, pl. 33. f. 2.

Rappia nasuta, Günth. *Proc. Zool. Soc.* 1868, p. 481.

Snout pointed, produced, longer than the orbital diameter; tympanum hidden. Fingers one-third, toes half webbed. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches nearly the tip of the snout. Skin smooth, slightly granular on the belly; no strong fold across the chest. Brownish, with small blackish dots on the head and back.

Angola.

a. ♀.

Duque de Bragance.

Prof. Barboza du Bocage [P.]. (Type.)

12. MEGALIXALUS.

Eucnemis, sp., *Tschudi, Batr.* p. 35; *Dum. & Bibr.* viii. p. 525.

Hyperolius, sp., *Rapp, Arch. f. Naturg.* 1842, p. 289; *Günth. Cat.* p. 85; *Cope, Nat. Hist. Rev.* 1865, p. 116.

Rappia, sp., *Günth. Zool. Rec.* i. p. 130.

Megalixalus, sp., *Günth. Proc. Zool. Soc.* 1868, p. 485.

Pupil vertical. Tongue heart-shaped or subrhomboidal, nicked and free behind. Vomerine teeth none. Tympanum distinct or hidden. Fingers and toes more or less webbed, the tips dilated into large disks. Outer metatarsals not separated. Omosternum and sternum with a bony style. Terminal phalanges obtuse.

Tropical Africa.

Synopsis of the Species.

I. Tympanum distinct.

Fingers half webbed 1. *seychellensis*, p. 128.

Fingers slightly webbed 2. *flavomaculatus*, p. 128.

II. Tympanum hidden.

Skin quite smooth above; tongue subrhomboidal 3. *madagascariensis*, p. 129.

Skin quite smooth above; tongue heart-shaped 4. *leptosomus*, p. 129.

Skin of upper surfaces with very small tubercles 5. *fornasinii*, p. 130.

Upper surface of head studded with acute tubercles 6. *spinifrons*, p. 130.

Skin of upper surfaces covered with spinous warts; fingers two-thirds webbed 7. *spinosus*, p. 130.

1. *Megalixalus seychellensis*.

Hyperolius seychellensis, *Günth. Cat.* p. 89.

Eucnemis seychellensis, *Tschudi, Batr.* p. 76; *Dum. & Bibr.* p. 537.

Megalixalus infrarufus, *Günth. Proc. Zool. Soc.* 1868, p. 485.

Tongue subrhomboidal, nicked behind. Head large; snout rounded, longer than the orbital diameter; tympanum distinct. Fingers half webbed, toes nearly entirely webbed. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the eye. Skin smooth, granular on the belly and under the thighs. Uniform greenish above, rufous beneath; lips and upper eyelid margined with white; thighs coloured.

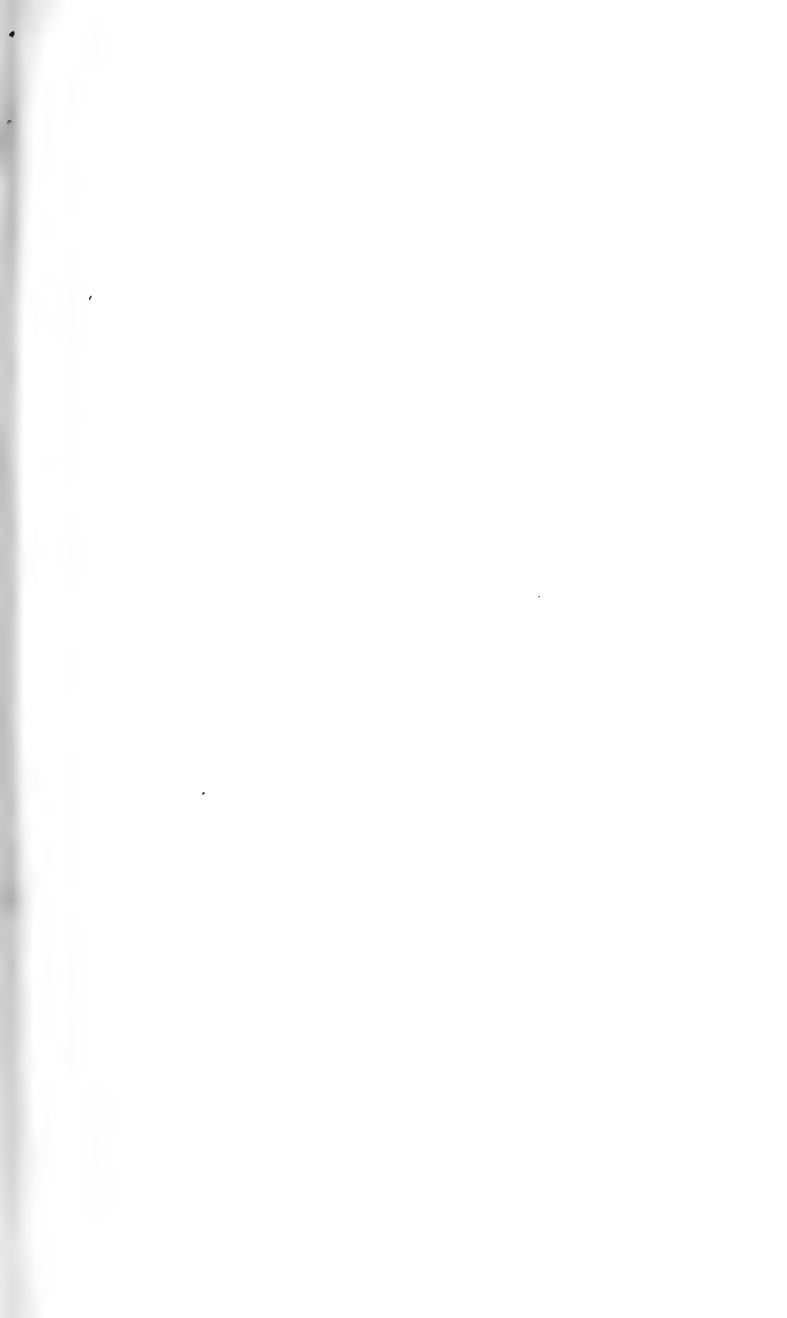
Seychelles.

a-b. ♀ & yg. Seychelles. E. P. Wright, Esq. [P.] (Types of *Megalixalus infrarufus*.)

2. *Megalixalus flavomaculatus*.

Hyperolius flavomaculatus, *Günth. Proc. Zool. Soc.* 1864, p. 310, pl. 27. f. 1.

Rappia flavomaculata, *Günth. Proc. Zool. Soc.* 1868, p. 481.



s-t	♀	East to tsiles.	D. Cowan.
w-w	♀	Tamatave	"
x-j.	♀	Madagascar.	Majaster.
a	♀	Farafangam, S.W. Madagascar.	Shu

Tongue heart-shaped. Snout rounded, as long as the orbital diameter; tympanum distinct. Fingers slightly, toes two-thirds webbed. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the eye. Skin smooth, granular on the belly and under the thighs. Upper parts dark violet, with round yellow spots; upper side of thighs coloured.

E. Africa.

a. ♀.

Rovuma Bay.

Dr. Livingstone [P.]. (Type.)

3. *Megalixalus madagascariensis*.

Hyperolius madagascariensis, Günth. Cat. p. 88.

Eucnemis madagascariensis, Dum. & Bibr. p. 528.

Hyperolius madagascariensis, Steind. Novara, Amph. p. 51.

Tongue subrhomboidal, nicked behind. Snout rounded, as long as the orbital diameter; tympanum hidden. Fingers webbed at the base, toes entirely webbed. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the eye. Skin smooth, granular on the belly and under the thighs. Greyish above, closely and minutely speckled with brown; a blackish stripe along the canthus rostralis; thighs not coloured, or with a few brown specks. Male with a subgular vocal sac and an adhesive disk covering the throat.

Madagascar.

The specimens *o-r* differ much in colour from the typical form. Not having been able to perceive any structural difference whatever, I must consider them merely as a variety of *M. madagascariensis*, which may be called *alboguttata*. The blackish stripe along the canthus rostralis is missing, and the upper surfaces (except the thighs and arms) are covered with round, white, black-edged spots.

a-c. ♂ ♀.

Madagascar.

d-e. ♀ & yg.

S. Madagascar.

f. ♀.

Mohambo.

g-k. ♀ & hgr.

Mahanora.

l-n. ♀.

Anzahamaru.

o-p. ♀.

S.E. Betsileo.

q-r. ♀.

Madagascar (P).

M. L. Bouton [P.].

4. *Megalixalus leptosomus*.

Hyperolius leptosomus, Peters, Mon. Berl. Ac. 1877, p. 619, f. 5.

Habit slender. Snout short, rounded, as long as the eye; tympanum hidden. Fingers webbed at the base, toes two-thirds webbed. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches in front of the eye. Skin smooth, granular on the belly and under the thighs. Brown; the snout and three stripes along the back white; sides of head and body and outer side of leg and tarsus with white dots.

Chincoxo, W. Africa.

5. *Megalixalus fornasinii*.

Hyperolius fornasinii, Günth. Cat. p. 89.

Eucnemis fornasinii, Bianc. Spec. Zool. Mossamb., Rept. t. 5. f. 1.

Hyperolius bivittatus, Peters, Arch. f. Naturg. 1855, p. 56.

Rappia fornasinii, Günth. Proc. Zool. Soc. 1868, p. 479.

Hyperolius dorsalis, (Schleg.) Peters, Mon. Berl. Ac. 1875, p. 206, pl. 1. f. 2.

Tongue heart-shaped. Snout rounded, as long as the orbital diameter; tympanum hidden. Fingers one-third webbed, toes nearly entirely webbed. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the eye. Skin with very small scattered tubercles above, granular on the belly and under the thighs. Brown above; two white bands along the back, confluent on the snout; thighs not coloured.

Tropical Africa.

<i>a-b.</i> Hgr.	Mozambique.	Prof. Peters [P.].
<i>c-d.</i> ♀.	Shiré Valley, Zambesi.	
<i>e-h.</i> ♀.	Zambesi Expedition.	Dr. Livingstone [P.].
<i>i, k.</i> ♀.	Zanzibar.	Sir J. Kirk [C.].
<i>l.</i> Hgr.	Quellimane.	Sir J. Kirk [C.].
<i>m.</i> ♀.	Lake Nyassa.	

6. *Megalixalus? spinifrons*.

Hyperolius spinifrons, Cope, Proc. Ac. Philad. 1862, p. 342.

Tongue elliptic, deeply nicked. Snout rounded; tympanum hidden. Fingers slightly webbed. Skin of upper surfaces smooth, except upon the front and muzzle, where it is studded with acute tubercles as in the cyprinid genus *Ceraticthys*. Above yellowish brown, with a dark-brown lateral band between the eye and the groin, which is pale-bordered anteriorly; also a median band which commences between the eye, and becomes wider and more indistinct posteriorly; femur not paler than tibia.

Umvoti, W. Africa.

7. *Megalixalus spinosus*.

Hyperolius spinosus, Buchh. & Peters, Mon. Berl. Ac. 1875, p. 208, pl. 1. f. 2.

Tongue heart-shaped. Head large; snout longer than the greatest orbital diameter; tympanum hidden. Fingers and toes two-thirds webbed. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the tip of the snout. Upper parts covered with spinous warts; belly and underside of thighs granulate. Dark brown or grey above, with three dark cross bands, one between the eyes, the other across the front part of the back, the third on the sacrum; limbs cross-barred; thighs coloured; grey or blackish brown beneath, punctulated with white.

Camaroons, W. Africa.

♀. Delagoa Bay. Monteiro.
♀. Ugozo. Emin Pasha.
Apr. Ngatana, E. Africa. Gregour.

Nyetixalus margaritifer, Blgr.
α. ♂ Hills Mt., Java. v. Hueg.

f. ♂ East London. Thorne
g. ♀ Zomba, Brit. E. Africa. Johnston.

13. CASSINA.

Cystignathus, sp., *Dum. & Bibr.* viii. p. 418; *Günth. Cat.* p. 30.

Kassina, *Girard, Proc. Ac. Philad.* vi. 1853, p. 421; *Cope, Nat. Hist. Rev.* 1865, p. 115.

Pupil vertical. Tongue heart-shaped, free behind. Vomerine teeth. Tympanum distinct. Fingers free, toes free or slightly webbed, the tips not dilated. Outer metatarsals not separated. Omosternum and sternum with a bony style. Terminal phalanges simple.

Tropical Africa.

This genus is closely allied to the following.

1. *Cassina senegalensis*.

Cystignathus senegalensis, *Günth. Cat.* p. 30.

Cystignathus senegalensis, *Dum. & Bibr.* p. 418; *Smith, Ill. S. Afr.* pl. 62.

Kassina senegalensis, *Girard, Proc. Ac. Philad.* vi. p. 421.

Cystignathus argyreivittis, *Peters, Arch. f. Naturg.* 1855, p. 55.

Vomerine teeth in two oblique groups between the choanæ. Head as broad as long; snout rounded, without canthus rostralis, its length more than the greatest orbital diameter; interorbital space as broad as the upper eyelid; tympanum slightly distinct, two thirds the width of the eye. Fingers and toes short, quite free; an oval inner, and a very small rounded outer metatarsal tubercle. The hind limb being carried forwards along the body, the tarso-metatarsal articulation reaches the tympanum. Skin smooth, slightly granular on the belly and under the thighs. Light brownish or olive above, with large elongate dark-brown spots, generally confluent into three stripes along the back; light olive-brown beneath, the throat blackish in the male. Latter with a large, longitudinally ovate, adhesive disk on the throat, and two introverted external subgular vocal sacs; the throat, on the sides and behind the adhesive disk, strongly and regularly plaited.

Tropical Africa.

a-d. ♂ ♀.

e. Very bad state.

Cape of Good Hope.

Zambesi.

Sir A. Smith [P.]

Sir J. Kirk [P.].

2. *Cassina wealii*. (PLATE XI. fig. 7.)

Vomerine teeth in two small indistinct oblique groups between the choanæ. Head broader than long; snout rounded, without canthus rostralis, as long as the greatest orbital diameter; interorbital space as broad as the upper eyelid; tympanum slightly distinct, half the width of the eye. Fingers slender; toes moderate, slightly though distinctly webbed at the base; two nearly equal-sized metatarsal tubercles. The hind limb being carried forwards along the body, the tarso-metatarsal articulation reaches the eye. Skin smooth,

belly entirely granular. Dark olive above, with large longitudinal spots, more or less confluent into stripes along the back; brownish beneath; throat blackish in the male. Latter with a large external subgular vocal sac, and a round or transversely ovate adhesive disk on the middle of the throat; no regular plaits on the throat. From snout to vent 40 millim.

Kafraria.

a. Several spec., ♂ ♀. ~~Veis~~, Kafraria.  P. P. M. Weale, Esq. [P.].

14. HYLAMBATES.

Hylambates, *A. Dum. Ann. Sc. Nat.* (3) xix. p. 162; *Cope, Nat. Hist. Rev.* 1865, p. 115.

Leptopelis, Günth. Cat. p. 89; *Cope, l. c.* p. 116.

? *Petropedetes, Reichenow, Arch. f. Naturg.* 1874, p. 290.

Pupil erect. Tongue free and more or less deeply notched behind. Vomerine teeth. Tympanum distinct. Fingers free or webbed; toes more or less webbed, the tips dilated. Outer metatarsals united. Omosternum and sternum with a bony style. Terminal phalanges claw-like, swollen at the base.

Tropical Africa.

The claw-shaped terminal phalanges constitute a character which distinguishes this genus at once from any other of the family *Ranidæ*. This character and the vertical pupil separate it from *Polypedates*, to which it bears some resemblance.

In Mr. Cope's classification this genus is split into two, viz. *Hylambates* and *Leptopelis*, falling into two different groups of the family *Ranidæ*. *Leptopelis* is said to differ from *Hylambates* in the claw-shaped distal phalanges. Upon what species the former is founded is not stated; but I suppose it is intended for *Hyla aubryi*. I have not been able to recognize the difference pointed out by Mr. Cope, all the species I have examined (*H. aubryi* as well as *H. mar-moratus*) having the distal phalanges as in the genus *Hyla*.

Synopsis of the Species.

I. Vomerine teeth between the choanæ.

A. Toes not half webbed; fingers free; inner metatarsal tubercle large, compressed.

- | | |
|--|------------------------------|
| Toes scarcely webbed; throat granulate; fingers free | 1. <i>bocagii</i> , p. 133. |
| Toes scarcely webbed; fingers webbed at the base | 2. <i>anchietæ</i> , p. 133. |
| Toes one-third webbed; throat smooth; fingers free | 3. <i>viridis</i> , p. 134. |

♀

Durban, Natal. Bouver.

♂

Cassina obscura, Bly.
Let Marefia, Shoa. Leuco Mus.
Type

B. Toes at least half webbed.

- Fingers free, toes half webbed; tibio-tarsal articulation not reaching the eye 4. *maculatus*, p. 134.
 Fingers slightly, toes half webbed .. 5. *aubryi*, p. 135.
 Fingers one-third, toes half webbed; tympanum three fourths the diameter of the eye..... 6. *natalensis*, p. 135.
 Fingers one-third, toes three-fourths webbed; tympanum three fourths the diameter of the eye 7. *rufus*, p. 136.
 Fingers two-thirds, toes entirely webbed; tympanum one third the diameter of the eye 8. *palmatus*, p. 136.
 Fingers free (?), toes half webbed; tympanum one third the diameter of the eye 9. *dorsalis*, p. 137.

II. Vomerine teeth behind the level of the choanæ.

- Fingers free, toes half webbed 11. *cameronensis*, p. 137.
 Fingers webbed at the base, toes two-thirds webbed 10. *microtympanum*, p. 137.

1. *Hylambates bocagei*.

Cystignathus bocagei, Günth. *Proc. Zool. Soc.* 1864, p. 481, pl. 33.f. 2.



Lower surface of hand.



Lower surface of foot.

Vomerine teeth in two small groups between the choanæ. Tympanum somewhat more than half the width of the eye. Fingers free, toes one-fourth webbed, the tips dilated into very small disks; a large, compressed, inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches in front of the tympanum. Skin smooth above; the entire lower surfaces granular. Uniform brown above. Male with an internal subgular vocal sac.

W. Africa.

a-b. ♂ ♀.

W. Africa.

Lisbon Museum.

2. *Hylambates anchietæ*.

Hylambates anchietæ, Bocage, *Jorn. Sc. Lisb.* 1873, p. 227.

Vomerine teeth in two small groups, close together. Tympanum

smaller than the eye, scarcely distinct. Fingers webbed at the base; toes scarcely webbed, the fourth very long; tips of fingers and toes dilated into well-developed disks; a large metatarsal tubercle. Skin smooth above; belly and lower surface of thighs granular. Upper surfaces ashy green; flanks brownish, with a few round yellowish spots; upper lip white-margined; a brown, white-edged line extends from the tip of the snout, through the eye, along each side of the body to the vent; near the latter it sends up a short perpendicular branch, dilated at the top. Hinder side of thighs brown, with a few small yellow spots. Yellowish white beneath.

Mossamedes, W. Africa.

3. *Hylambates viridis*. (PLATE XII. fig. 5.)

Hylambates viridis, Günth. *Proc. Zool. Soc.* 1868, p. 487.

Vomerine teeth in two small groups between the choanæ. Tympanum half the width of the eye. Fingers free, toes one third-webbed, the tips dilated into small disks; a large, compressed, inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the tympanum. Skin smooth, granular on the belly and under the thighs. Greenish or brownish above, immaculate or with two or four longitudinal dark-brown stripes.

W. Africa.

a. ♀.	W. Africa.	(Type.)
b. ♀.	W. Africa.	
c. ♀.	Angola.	J. J. Monteiro.
d. ♀.	— ?	Sir A. Smith [P.].
e. ♀.	— ?	College of Surgeons.

4. *Hylambates maculatus*.

Hylambates maculatus, A. Dum. *Ann. Sc. Nat.* (3) xix. p. 165, pl. 7; Peters, *Arch. f. Naturg.* 1855, p. 56.

Vomerine teeth in two small groups between the choanæ. Tympanum nearly half the width of the eye. Fingers free, toes half webbed; disks moderate; a very small, blunt, inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the tympanum. Skin smooth, granular on the belly and under the thighs. Upper parts olive, with large insuliform dark-brown, light-edged spots; limbs cross-barred. Male with two subgular vocal sacs, and a small adhesive disk on the throat.

E. Africa.

a. ♀.	Rovuma Bay.	Sir J. Kirk [P.].
b. ♂.	Shiré Valley, Zambesi.	
c. ♀.	Mozambique.	Prof. Peters [P.].
d-f. ♂ ♀.	Zanzibar.	Sir J. Kirk [C.].

Hylambates angolensis, Bocage.

- a. ♀ Caconda, Angola Bocage
b. ♀ Guissange, " "

- a. ♀ Caconda, Angola. Bocage.

1. ♀ Let. Marefia, Shoa. Geneva Mus.
2. ♂ Bolama, Guinea. Bocage.

f. i. ♂ ♀

Niger.

Crosse.

5. *Hylambates aubryi*.*Leptopelis aubryi*, *Günth. Cat.* p. 89.*Leptopelis natalensis*, part., *Günth. l. c.* p. 144.*Hyla punctata*, *Hallow. Proc. Ac. Philad.* vii. p. 193.— *aubryi*, *A. Dum. Rev. et Mag. Zool.* 1856, p. 561.*Hylambates aubryi*, *A. Dum. Arch. Mus.* x. p. 229, pl. 18. f. 3.

Vomerine teeth in two small groups between the choanæ. Tympanum half the width of the eye. Fingers slightly, toes half webbed; disks well developed; a rather strong, compressed, inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the eye, or beyond. Skin smooth above, granular beneath. Brownish above, with a dark triangular spot between the eyes, and some irregular dark spots on the back.

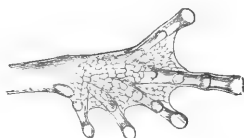
W. Africa.

- | | |
|-------|------------------|
| a. ♀. | Ashantee. |
| b. ♀. | Gaboon. |
| c. ♀. | Coast of Guinea. |
| d. ♀. | W. Africa. |
| e. ♀. | Africa. |

Sir A. Smith [P.].
Sir A. Smith [P.].

6. *Hylambates natalensis*.*Leptopelis natalensis*, *Günth. Cat.* p. 144.*Polypedates natalensis*, *Smith, Ill. S. Afr., Rept., App.* p. 25.

Lower surface of hand.



Lower surface of foot.

Vomerine teeth in two small groups between the choanæ. Tympanum three fourths the width of the eye. Fingers one-third, toes half webbed; disks well developed; a rather small, oval, inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the eye. Skin smooth above, granular beneath. Brownish or olive above, with a greenish or dark brown, black-edged stripe from the tip of the snout through the eye to the shoulder; large insuliform spots on the sides and irregular cross bands on the limbs.

S. Africa.

- | | |
|----------|-------------|
| a. ♀. | Natal. |
| b, c. ♀. | Port Natal. |
| d. ♀. | Africa. |

Sir A. Smith [P.]. (Type.)
T. Ayres, Esq. [P.].
Sir A. Smith [P.].

7. *Hylambates rufus*.

Leptopelis rufus, *Reichenow, Arch. f. Naturg.* 1874, p. 291.

Hylambates notatus, *Buchh. & Peters, Mon. Berl. Ac.* 1875, p. 205, pl. 2. f. 1.

Vomerine teeth in two small groups between the choanæ. Tympanum three fourths the width of the eye. Fingers one-third, toes three-fourths webbed; disks well developed; a moderate, slightly compressed, inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the eye, or beyond. Skin shagreened above, granular beneath. Brown or purplish above, immaculate or with dark symmetrical markings, viz. a cross line between the eyes and a large triangular spot on the middle of the back, and indistinct cross bars on the limbs; upper lip white; flanks with black reticulations, or white black-edged spots.

W. Africa.

a-b. ♀.

Gaboon.

H. Ansell, Esq. [P.].

c. Yg.

Cameroons.

Mr. Rutherford [C.].

d, e. ♀.

Cameroons.

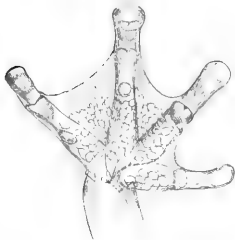
f. ♀.

Fernando Po.

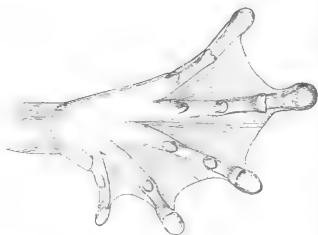
Mr. Fraser [C.].

8. *Hylambates palmatus*.

Hylambates palmatus, *Peters, Mon. Berl. Ac.* 1868, p. 453, pl. 2. f. 2.



Lower surface of hand.



Lower surface of foot.

Vomerine teeth in two small groups between the choanæ. Tympanum one third the width of the eye. Fingers two-thirds, toes entirely webbed; disks large; a small, blunt, inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches in front of the eye. Skin shagreened above, granular beneath. Uniform purplish brown above.

W. Africa.

a. ♀

Cameroons.

b. ♀ Hylambates millsoni Blys.
Mouths of the Niger. Millson. (Type)



9. *Hylambates dorsalis*.

Hylambates dorsalis, *Peters, Mon. Berl. Ac.* 1875, p. 209, pl. 3. f. 5.

Vomerine teeth in two small groups between the choanæ. Tympanum one third the width of the eye. Fingers free (?), toes half webbed; disks moderate; inner metatarsal tubercle small. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the eye. Skin of upper surfaces with a few slight folds and small scattered tubercles; belly and under surface of thighs granular. Dark brown above, with a broad light band, narrowed posteriorly, along the middle of the back; limbs cross-barred.

Yoruba, Lagos.

10. ~~*Hylambates microtypanum*. *Rhacophorus*.~~

~~*Hylambates microtypanum*, *Boettg. Zool. Anz.* 1881, p. 47, and *Abh. Ver. Brem.* vii. p. 185.~~

~~Vomerine teeth in two oblique groups extending beyond the level of the hinder edge of the choanæ. Tympanum one third the width of the eye, slightly distinct. Outer fingers webbed at the base; toes two-thirds webbed; disks small. Skin smooth, granular on the belly and under the thighs. Grey above, elegantly variegated with blackish, white-edged confluent spots; sides spotted and speckled with white; limbs cross-barred; entirely brown beneath.~~

~~Madagascar.~~

11. ~~*Hylambates?* *cameronensis*. *Rana?*~~

~~*Petropedetes cameronensis*, *Reichenow, Arch. f. Naturg.* 1874, p. 290, pl. ix. f. 2.~~

~~*Platyantis cameronensis*, *Peters, Mon. Berl. Ac.* 1875, p. 211.~~

~~Vomerine teeth in two small groups behind the level of the choanæ. Tympanum half the width of the eye. Fingers free, toes half webbed; disks moderate; inner metatarsal tubercle small. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the eye. Skin of back with small tubercles and four longitudinal glandular folds; smooth beneath. Reddish brown above, with black markings.~~

~~Bambia, Cameroons.~~

15. HYLIXALUS.

Hyloxalus. Espada, Jorn. Sc. Lisb. iii. 1870, p. 59.

Pupil horizontal. Tongue heart-shaped, free behind. Vomerine teeth none. Tympanum distinct. Fingers free, toes webbed, dilated into distinct disks, each of which exhibits two leathery dermal scales on the upper side, separated by a fissure. Outer metatarsals

united. Omosternum with a bony style; sternum membranous, rudimentary. Terminal phalanges T-shaped.

Ecuador.

1. *Hylixalus bocagii*.

Hyloxalus bocagei, *Espada, Jorn. Sc. Lisb.* iii. 1870, p. 59, and *Viaj. Pacif., Vertebr.* pl. 3. f. 2.

Snout depressed, projecting, truncate; canthus rostralis angular; loreal region nearly vertical; nostril nearer the tip of the snout than the eye; interorbital space as broad as the upper eyelid; tympanum half the width of the eye. First finger not extending beyond second; toes nearly entirely webbed; subarticular tubercles small; two metatarsal tubercles. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches in front of the eye. Skin quite smooth; a fold from the eye to the shoulder. Dark olive-brown above; lower surfaces white, immaculate or dotted with brown. Male with a subgular vocal sac.

Ecuador.

a-b. ♂ ♀.

Sarayacu.

Mr. Buckley [C.].

c-e. ♀.

Canelos.

Mr. Buckley [C.].

2. *Hylixalus fuliginosus*.

Hyloxalus fuliginosus, *Espada, Jorn. Sc. Lisb.* iii. 1870, p. 59, and *Viaj. Pacif., Vertebr.* pl. 3. f. 1.

Differs from the preceding in its half-webbed toes and granular upper surfaces. Brown above, white beneath, except the throat.

Ecuador.

16. PROSTHERAPIS.

Prostherapis, *Cope, Proc. Ac. Philad.* 1868, p. 137.

Pupil horizontal. Tongue elliptic, entire, free behind. Vomerine teeth none. Tympanum distinct or indistinct. Fingers free; toes nearly free, dilated into distinct disks, each of which exhibits two leathery dermal scales on the upper side, separated by a fissure. Outer metatarsals united. Omosternum with a bony style; sternum membranous, rudimentary. Terminal phalanges T-shaped.

S. America.

1. *Prostherapis inguinalis*.

Prostherapis inguinalis, *Cope, l. c.*

Snout depressed, with angular canthus rostralis, truncate from above; loreal region nearly vertical; nostril nearer the tip of the snout than the eye; interorbital space broader than the upper eyelid; tympanum concealed. First finger longer than second; toes with a slight rudiment of web; subarticular tubercles small; two

f. ♀

Bozeta.

1881.

b. ♂ Phyllobates trilineatus
Prostherapsis femoralis, Blgr.
Yarimaguas. Hahnel. (Types)

Yg. Phyllobates limbatus, Cope.
Cuba. Linnæa.

~~Phyllobates~~
Prostherapis trinitatis Garm.

- a. b. ♀ Trinidad. Mus. Comp. Zool. (Type)
c. Several specs., hyp. & ys Trinidad. Caracaras.
d. " " , Ad. ys, larvae. Andes of Venezuela.
Hartert.

Prostherapis femoralis, Bly.

- a. b. ♂ Yacimaquas. Hahnel. (Types)
c. d. Yg. Ecuador. Linnaea.

very small metatarsal tubercles. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the eye. Skin tubercular above. Dark brown above, sides blackish; upper lip white; lower surfaces variegated with grey and white. Male with a subgular vocal sac.

Colombia; Ecuador; Demerara.

a. ♂.	Sarayacu.	Mr. Buckley [C.].
b. ♀.	Canelos.	Mr. Buckley [C.].
c. ♀.	Demerara.	Zool. Soc.

In the latter specimen, the axillæ and a spot on the loin are of a beautiful pink colour; the belly and the inferior surface of the limbs are whitish, brown-spotted.

2. *Prostherapis whymperi*.

Snout depressed, projecting, truncate, with angular canthus rostralis; loreal region nearly vertical; nostril nearer the tip of the snout than the eye; interorbital space broader than the upper eyelid; tympanum perfectly distinct, two thirds the width of the eye. First and second fingers equal; toes quite free; disks of fingers and toes small; subarticular and inner metatarsal tubercles indistinct; no outer metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation marks the anterior border of the eye. Skin everywhere perfectly smooth. Blackish; throat and belly marbled with grey; lower surface of hind limbs greyish, of arms whitish. Male with an internal vocal sac. From snout to vent 24 millim.

Ecuador.

a. ♂.	Tanti (2000 feet).	Edward Whymper, Esq. [C.].
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17. PHYLLODROMUS.

Phyllodromus, *Espada*, *Viaj. Pacif.*, *Vertebr.* pl. 3. f. 3 (no description).

Pupil horizontal. Tongue elliptic, entire and free behind. Vomerine teeth none. Tympanum distinct. Fingers free, toes nearly free, dilated into distinct disks, each of which exhibits two leathery dermal scales on the upper side, separated by a fissure. Outer metatarsals united. Omosternum cartilaginous; sternum a small cartilaginous plate. Terminal phalanges T-shaped.

Ecuador.

1. *Phyllodromus pulchellus*.

Phyllodromus pulchellum, *Espada*, *l. c.* (no description).

Snout depressed, projecting, truncate from above; canthus rostralis angular; loreal region vertical; nostril nearer the tip of the snout than the eye; interorbital space broader than the upper

eyelid; tympanum rather more than half the width of the eye. First and second fingers equal; toes with a slight rudiment of web; subarticular tubercles small; two small metatarsal tubercles. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the eye. Skin smooth. Brownish above, maculated with dark brown; sides dark brown; upper lip white; a white stripe from eye to groin; whitish beneath, immaculate.

Ecuador.

a. ♀.

Intac.

Mr. Buckley [C.].

18. COLOSTETHUS.

Colostethus, Cope, *Proc. Ac. Philad.* 1866, p. 130, and *Journ. Ac. Philad.* (2) vi. 1867, p. 197.

Pupil horizontal. Tongue elliptic, entire and free behind. Vomerine teeth none. Tympanum distinct. Fingers and toes free, the tips dilated into distinct disks. Outer metatarsals united. No omosternum; sternum rudimentary, membranous. Terminal phalanges with transverse limb.

Colombia.

1. *Colostethus latinasus*.

Phyllobates latinasus, Cope, *Proc. Ac. Philad.* 1863, p. 48.
Colostethus latinasus, Cope, *ead. loc.* 1866, p. 130.

Head elongate; snout prominent, broad and concavely truncate, as long as the greatest orbital diameter. Tympanum one fourth extent of orbit. A dermal fold on the tarsus; two metatarsal tubercles. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the anterior border of the orbit. Above brown; a black band across end of snout and loreal region, through eye to groin, pale-bordered above on the snout, and interrupted by an oblique white line from the femur; femur dark posteriorly, tibia cross-banded; beneath pale, immaculate.

Truando region, Colombia.

2. DENDROBATIDÆ.

Hylaplesidæ, Günth. *Cat. Batr. Sal.*; *Mixart*, *Proc. Zool. Soc.* 1869.
Dendrobatidæ, Cope, *Nat. Hist. Rev.* 1865, and *Journ. Ac. Philad.* (2) vi. 1867.

Teeth none; diapophyses of sacral vertebra not dilated.

This family includes two genera. But for the absence of teeth, these forms agree perfectly with the *Ranidæ*, especially the last four genera. Between *Prostherapis* and *Dendrobates* the analogy is so great in every respect, anatomical as well as external, that, were it not for the presence of maxillary teeth in the former, both genera might be united.

b-c. ♀ Yarimaguas Hahnel.

a. ♀
b-c. ♂ ♀

Nossi Bé.
"

Linnaea.
Pückenberg

1. MANTELLA.

Pupil horizontal. Tongue elongate, free and distinctly nicked behind. Tympanum distinct. Fingers and toes free, the tips dilated into regular disks. Outer metatarsals united. Omosternum and sternum with a bony style. Terminal phalanges T-shaped.

Madagascar.

1. *Mantella betsileo*.

Dendrobates betsileo, *Grandid. Ann. Sc. Nat.* (5) xv. art. 20, p. 11.

Snout subacuminate, as long as the diameter of the eye, with angular canthus rostralis; loreal region vertical; interorbital space broader than the upper eyelid; tympanum more or less distinct, about half the width of the eye. Fingers rather slender, first not extending as far as second; toes moderate, tips of fingers and toes dilated into small disks; subarticular tubercles distinct; two small metatarsal tubercles. The hind limb being carried forwards along the body, the tarso-metatarsal articulation marks the eye or the tip of the snout. Skin of back minutely granulate; a more or less distinct fold from the eye to the shoulder. Upper surface of head and back uniform light olive, sides and lower surfaces black, the two colours sharply defined; limbs dark olive, indistinctly barred with darker; a light line on the upper lip, extending to the base of the arm; lower surfaces spotted with light olive.

Madagascar.

a-d. ♀ & hgr.

Mohambo.

2. *Mantella ebenau*. = *M. betsileo*.

Dendrobates ebenau, *Boettg. Zool. Anz.* 1880, p. 281.

Head short, subtriangular; tympanum half the size of the eye. First and second fingers equal; tips of fingers and toes dilated into very small disks; subarticular tubercles well developed; two metatarsal tubercles. Skin of back minutely granulate. Above with a broad light zone—silvery in the male, greenish golden in the female,—well defined from the black colour of the sides; limbs dark grey, with rather indistinct black spots and stripes; a silvery-white line round the upper lip, extending to the base of the arm; beneath black, white-spotted.

Nossi Bé.

3. *Mantella madagascariensis*.

Dendrobates madagascariensis, *Grandid. l. c.* p. 10.

Skin finely shagreened. Male uniform bluish black; belly with light blue spots; thighs and inner side of legs beautiful red. Female deep black, with a light-green spot at the base and in front

of the limbs; belly with light blue spots; inner side of legs beautiful red.

Madagascar.

2. DENDROBATES.

Hylaplesia, sp., *Boie, Isis*, 1827, p. 294; *Tschudi, Batr.* p. 70.

Dendrobates, *Wagl. Syst. Amph.* p. 202; *Dum. & Bibr.* viii. p. 649;

Cope, Journ. Ac. Philad. (2) vi. 1867, p. 197.

Hylaplesia, *Günth. Cat.* p. 124.

Pupil horizontal. Tongue elongate, entire and free behind. Tympanum more or less distinct. Fingers and toes free, the tips dilated into regular disks. Outer metatarsals united. Omosternum with a weak, semiossified style; sternum cartilaginous. Terminal phalanges T-shaped.

Tropical America.

Synopsis of the Species.

- First finger not extending so far as second;
skin smooth; tarso-metatarsal articulation not reaching the tip of the snout . . . 1. *tinctorius*, p. 142.
- Tympanum much smaller than the digital disks; skin smooth 2. *typographus*, p. 143.
- First finger extending beyond second; skin of back tubercular; snout longer than the diameter of the eye 3. *trivittatus*, p. 144.
- First finger not extending so far as second; tarso-metatarsal articulation reaching beyond the tip of the snout; skin smooth . . . 4. *lugubris*, p. 145.
- First finger longer than second; skin smooth 5. *talamancæ*, p. 145.
- First finger extending beyond second; skin of back tubercular; snout not longer than the diameter of the eye 6. *parvulus*, p. 145.
- First finger extending beyond second; tympanum one fifth the size of the eye; skin areolate on the upper surfaces 7. *labialis*, p. 146.

1. *Dendrobates tinctorius*.

Hylaplesia tinctoria, *Günth. Cat.* p. 125.

Linn. Amœn. i. p. 566.

Calamita tinctorius, *Schneid. Hist. Amph.* p. 175; *Merr. Tent.* p. 169.

Rana tinctoria, *Shaw, Zool.* iii. p. 135.

Hyla tinctoria, *Latr. Rept.* ii. p. 170; *Daud. Rain.* p. 25, pl. 8, and *Rept.* viii. p. 48; *Cuv. R. A.*

Dendrobates tinctorius, *Wagl. Syst. Amph.* p. 202; *Dum. & Bibr.* p. 252, pl. 90. f. 1; *Steindachn. Verh. zool.-bot. Ges. Wien.* 1864, p. 260, pl. 15. f. 2, & pl. 13. f. 1; *Kieferst. Götting. Nachr.* 1867, p. 359; *Brocchi, Bull. Soc. Philom.* (7) i. p. 194.

a. ♂

Mantella baroni, Blgr. Barou.
Madagascar.

Mantella cowanii, Blgr.
a-b. ♀ East Betsileo. D. Cowan.

Dendrobates reticulatus, Blgr.
Several sp. Yarinaguas. Hahnel. (Types)

Dendrobates fantasticus, Blgr.
d. ♂ ♀ Yarinaguas Hahnel. (Types)

v. z. ♂ & yg. (var. F.) Tabago. (Champion.
Ja. ♀ Venezuela. Fischer.
t. yg. (var. C.) Providence I., Chiriqui Lagoon
Cockerell.

- Hylaplesia tinctoria*, Boie, *Isis*, 1827, p. 294; *Tschudi, Batr.* p. 70.
Dendrobates histrionicus, Berth. *Götting. Nachr.* 1845, p. 43, and
Abhandl. p. 15, pl. 1. f. 8.
Phyllobates auratus, Girard, *U.S. Astron. Exped.* ii. p. 209.
Hylaplesia aurata, Cope, *Proc. Ac. Philad.* 1863, p. 49.
Phyllobates chocoensis, Posada Arango, *Rev. et Mag. Zool.* 1872,
 pl. 27.

Snout truncate, longer than the diameter of the eye; loreal region vertical; interorbital space broader than the upper eyelid; tympanum more or less distinct, about half the diameter of the eye. First finger not extending so far as second; disks of fingers large, truncate, of toes smaller; subarticular tubercles not very distinct; two scarcely distinct metatarsal tubercles; sometimes a rather indistinct tubercle on the middle of the tarsus. The hind limb being carried forwards along the body, the tarso-metatarsal articulation reaches between the eye and the tip of the snout. Skin smooth. Male with a subgular vocal sac.

Tropical America.

The following specimens may be divided into five varieties of coloration:—

A. Uniform black.

- | | | |
|---------------------|-----------|-----------------------|
| <i>a-d, e.</i> ♂ ♀. | Panama. | Madame Pfeiffer [C.]. |
| <i>f, g.</i> ♂. | Santarem. | Mr. Wickham [C.]. |

B. Upper surfaces uniform grey; sides and inferior surfaces uniform black.

- | | | |
|-------------------|-------|-----------------------|
| <i>h, i.</i> ♂ ♀. | Para. | R. Graham, Esq. [P.]. |
| <i>k.</i> ♀. | Para. | |

C. Grey, with large black blotches.

- | | | |
|--------------|--------------------|-----------|
| <i>l.</i> ♂. | Isthmus of Darien. | Zool Soc. |
|--------------|--------------------|-----------|

D. Above black, with two or three white (or pink) longitudinal stripes, sometimes one or two cross streaks between; beneath grey, black-spotted.

- | | | |
|----------------------|--------------------|-----------------------|
| <i>m.</i> ♀. | Cayenne. | |
| <i>n.</i> Yg. | Para. | R. Graham, Esq. [P.]. |
| <i>o-p, q-r.</i> Yg. | Sarayacu, Ecuador. | Mr. Buckley [C.]. |

E. Black; above with white stripes and spots; beneath spotted or marbled with white.

- | | | |
|-----------------|-----------|-------------------------------------|
| <i>s.</i> Hgr. | Santarem. | Mr. Wickham [C.]. |
| <i>t-u.</i> Yg. | Cayaria. | W. Davis [C.]. Messrs. Veitch [P.]. |

2. *Dendrobates typographus*.

- Dendrobates typographus*, Keferst. *Götting. Nachr.* 1867, p. 360, and
Arch. f. Naturg. 1868, p. 298, pl. 9. f. 7; *Cope, Journ. Ac. Philad.*
 (n. s.) viii. part 2, p. 102.
 — ignitus, *Cope, Proc. Ac. Philad.* 1874, p. 68.

Snout obtuse; canthus rostralis rounded. Tympanum very small.

Disks of fingers much larger than the tympanum. Skin quite smooth. Greyish or vermilion-red, with or without small dark markings on the back; all four limbs black.

Central America.

3. *Dendrobates trivittatus*.

Hylaplesia picta, *Günth. Cat.* p. 125.

Hyla trivittata, *Spir. Spec. Nov. Test. Ran.* p. 35, pl. 9. f. 1.

— *nigerrima*, *Spir. l. c.* p. 36, pl. 9. f. 2.

Dendrobates nigerrimus, *Wagl. Syst. Amph.* p. 202; *Steindachn. Verh. zool.-bot. Ges. Wien*, 1864, p. 257, pl. 13. f. 2.

— *trivittatus*, *Wagl. l. c.*; *Peters, Mon. Berl. Ac.* 1872, p. 213; *Cope, Proc. Ac. Philad.* 1874, p. 129.

Hylaplesia picta, *Tschudi, Batr.* p. 71.

Dendrobates obscurus, *Dum. & Bibr.* p. 655; *Guichen. An. Nouv. Amér. mérid.* p. 87, pl. 18. f. 2.

— *pictus*, *Dum. & Bibr.* p. 656; *Guichen. in Gay, Hist. Chile, Zool.* ii. p. 119.

Snout truncate, a little longer than the diameter of the eye; loreal region vertical; interorbital space broader than the upper eyelid; tympanum more or less distinct, about half the diameter of the eye. Fingers slender, first extending slightly beyond second; toes slender; tips of fingers and toes dilated into small disks; sub-articular tubercles distinct; two scarcely prominent metatarsal tubercles. The hind limb being carried forwards along the body, the tarso-metatarsal articulation reaches far beyond the tip of the snout. Back tubercular; a scarcely prominent glandular lateral fold. Black above and below. Male with a subgular vocal sac.

Tropical America.

The following specimens belong to three varieties of coloration:—

A. Uniform black.

a. ♀. Brazil.

B. A whitish line along the side of the back, the outer edge of the upper eyelid, and the canthus rostralis, confluent with its fellow on the end of the snout; another whitish line on the upper lip, commencing from the vertical of the front edge of the eye, extending to the arm; sides, belly, and lower surface of limbs with whitish spots.

b. ♂. Demerara.

c. ♀. Vryheids Lust, Demerara. W. T. Turner.

d. ♀. Surinam. Mr. Bartlett [C.].

e. ♂. Surinam. Hr. Kappler [C.].

f-g. ♂. Para.

h. ♀. Cayaria. W. Davis, Esq. [C.]. Messrs. Veitch [P.].

C. Forehead whitish; three whitish streaks along the back, the two outer continued on the upper surface of the hind limbs; a whitish line on the upper lip, as in var. B; loins and axilla

Ad. Costa Rica. Zool. Soc.
g. " Chontalez Mines, Nicaragua. Riv

Dendrobates hahnelii, Blgr.
x. Several sp., ♂ & ♀ Yarimaquas. Hahnel.
(Types.)

with large whitish spots ; a few small whitish spots under the limbs.

i-k. ♂ ♀.

Chyavetas, E. Peru.

D. As in var. B, but with white spots on the back ; belly whitish, marbled with brown. Perhaps a distinct species.

l. Hgr.

S. Domingo.

4. *Dendrobates lugubris*.

Dendrobates lugubris, Schmidt, *Denkschr. Ac. Wien*, 1858, p. 250, pl. 2. f. 14.

Allied to *D. trivittatus*. It differs from the latter in the proportions of the fingers (the first not extending as far as the second) and the larger disks. The tarso-metatarsal articulation reaches a little beyond the tip of the snout. Skin smooth. Black ; a whitish line along the side of the back, the outer edge of the upper eyelid, and the canthus rostralis, confluent with its fellow on the end of the snout ; lower surfaces marbled with whitish ; a whitish line from below the eye to the shoulder. Size very small.

Colombia.

a. ♂.

Bogotá.

Mr. Marks [P.].

5. *Dendrobates talamancæ*.

Dendrobates talamancæ, Cope, *Journ. Ac. Philad.* (n. s.) viii. 1876, p. 102, pl. 23. f. 6.

Allied to *D. lugubris*. First finger longer than the second. Heel marking the middle of the orbit. Skin entirely smooth. Colour brown above, separated by a border of light pigment from the white of the lower surfaces ; top of muzzle, and a band from the eye to groin on each side, yellowish.

Costa Rica.

6. *Dendrobates parvulus*. (PLATE XII. fig. 6.)

Snout truncate, as long as the diameter of the eye ; loreal region vertical ; interorbital space a little broader than the upper eyelid ; tympanum moderately distinct, nearly half the diameter of the eye. Fingers slender, first extending beyond second ; toes slender ; tips of fingers and toes dilated into rather small disks ; subarticular tubercles distinct ; two scarcely prominent metatarsal tubercles. The hind limb being carried forwards along the body, the tarso-metatarsal articulation reaches far beyond the tip of the snout. Back tubercular. Black ; upper surfaces closely punctated with whitish, most distinctly on the head and the front part of the back ; lower surfaces marbled with bluish grey. Male with a subgular vocal sac. From snout to vent 22 millim.

Ecuador.

a-b. ♂.

c. ♀.

Sarayacu.

Canelos.

Mr. Buckley [C.].

Mr. Buckley [C.].

7. *Dendrobates labialis*.

Dendrobates labialis, Cope, *Proc. Ac. Philad.* 1874, p. 129.

Snout flat, moderately elongate, and broadly truncate, as long as the diameter of the eye; tympanum one fifth the size of the eye. First finger longer than second. Skin minutely areolate on the upper surfaces. Upper lip pale-banded, the band extending through the axilla and meeting its fellow at the pubis.

Nauta, Upper Amazon.

The following genus is referred with doubt to this family:—

STUMPFIA, Boettger, *Zool. Anz.* 1881, p. 360.

“Habit of *Dendrobates*, but without digital disks. Tongue sub-fungiform, divided into two subequal parts by a deep transverse groove; the front part triangular, adherent, free on the sides only; the hind part free everywhere, except in front, thick, orbicular, slightly pointed behind, entire. No maxillary nor palatine teeth. Tympanum, eustachian tubes, and parotoids not visible. Fingers free, the tips truncate; the tips of the third finger and of the median toe slightly dilated. No metatarsal tubercles or spur.”

S. psologlossa, Boettg. l. c.—Nossi Bé, Madagascar.

3. ENGYSTOMATIDÆ.

Phryniscidæ, Brachycephalidæ, part., Rhinodermatidæ, Engystomatidæ, part., Bufonidæ, part., Micrhyliidæ, *Günth. Cat. Batr. Sal.*
Rhinophrynidæ, part., Engystomidæ, Brachymeridæ, part., Cope, *Nat. Hist. Rev.* 1865.

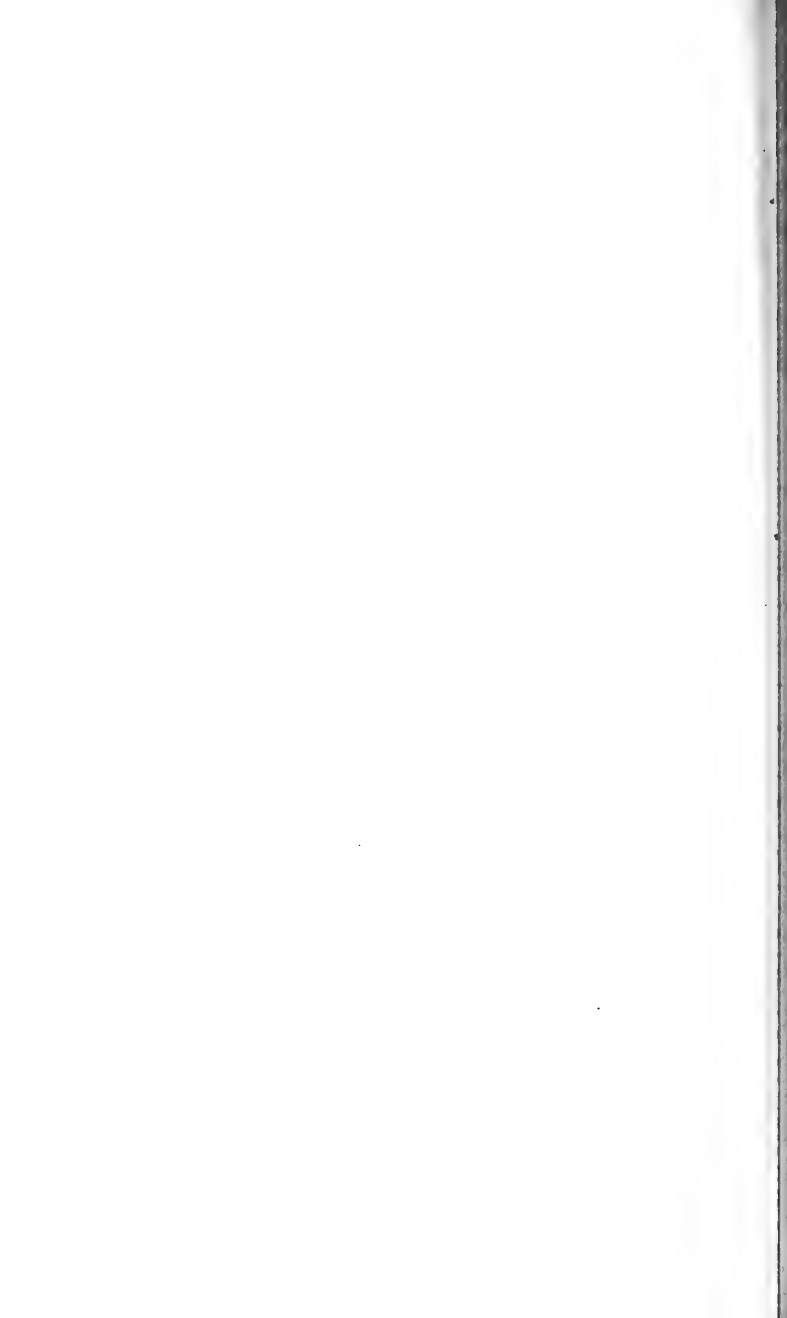
Brevicipitidæ, Engystomidæ, Phryniscidæ, Hemisidæ, Cope, *Journ. Ac. Philad.* (2) vi. 1867.

Phryniscidæ, Bufonidæ, part., Xenorhinidæ, Engystomidæ, *Mivart, Proc. Zool. Soc.* 1869.

Maxillary teeth none; diapophyses of sacral vertebra dilated.

The members of this family exhibit great differences in the structure of the sternal apparatus. Whilst *Rhinoderma* and *Phrynisca* approach the preceding families—the former genus being provided with a cartilaginous omosternum, a part totally absent in all other genera of the present family—*Engystoma*, *Callula*, and others show, in the absence of precoracoids, a structure which is not met with in any other family but that of *Dyscophidæ*. *Hemisis* and *Breviceps* are also remarkable forms, the proportions in the latter and the position in the former of the bones of the sternal apparatus being unlike what obtains in any other Frog.

The vertebrae are procœlian and without ribs; the coccyx is



attached by two condyles, except in the genus *Breviceps*, where it is confluent with the sacrum.

None of the genera have a fronto-parietal fontanelle.

The distal phalanges may be simple or T-shaped.

This family includes terrestrial, aquatic, and burrowing types, but no arboreal—*Callula*, *Brachymerus*, and others, generally regarded as “tree-frogs,” being merely aquatic or terrestrial, in spite of their digital dilatations.

For the purpose of burrowing, either the hind pair of limbs (*Hypopachus*, *Glyphoglossus*, *Cacopus*, *Breviceps*, &c.), or the front pair (*Hemisis*), are particularly strengthened and provided with corneous sheaths.

In the last-named genera the mouth is very narrow, and those Frogs may be considered “ant-eaters,” similarly as the Bufonid genus *Rhinophrynus*.

In more than half of the genera the pupil is erect.

Synopsis of the Genera.

I. Precoracoids present; coracoids moderate, horizontal.

Pupil horizontal; tongue subtriangular; a cartilaginous omosternum.

1. *Rhinoderma*, p. 148.

Pupil horizontal; tongue elliptical; no omosternum; palate without ridges 2. *Phrynisceus*, p. 149. *Atelopus*

Pupil horizontal; tongue elliptical; a dorsal bony shield.

3. *Brachycephalus*, p. 156.

Pupil erect; tongue elliptical; palate without ridges.

4. *Melanobatrachus*, p. 156.

Pupil horizontal; tongue heart-shaped.

5. *Sphenophryne*, p. 157.

Pupil horizontal; tongue elliptical; a denticulated dermal ridge across the palate between the choanæ, and another in front of the œsophagus 6. *Calophrynus*, p. 157.

Pupil round; tongue large; toes free; anterior portion of the sclerotica ossified 7. *Stereocyclops*, p. 158.

Pupil erect; tongue elliptical; a dermal ridge across the palate between the choanæ, and another in front of the œsophagus; toes webbed at the base 8. *Hypopachus*, p. 159.

II. No precoracoids.

Pupil erect; tongue elliptical; tympanum hidden; toes free.

9. *Engystoma*, p. 160.

Pupil erect; tongue elliptical; tympanum hidden; toes more or less webbed 10. *Microhyla*, p. 163.

- Pupil erect; tongue oblong; palatine bones forming an acute ridge; tympanum hidden 11. **Callula**, p. 167.
- Tongue heart-shaped; palatine bones each with two curved teeth; tympanum distinct 12. **Xenobatrachus**, p. 172.
- Pupil erect; tongue large, oblong, nicked behind; tympanum hidden; toes free 13. **Phrynomantis**, p. 172.
- Pupil erect; tongue oval; two small bony prominences between the choanæ; toes webbed at the base.. 14. **Cacopus**, p. 173.
- Pupil erect; tongue divided into two lateral halves by a deep groove. 15. **Glyphoglossus**, p. 175.

III. Precoracoids present; coracoids very much dilated.

- Pupil horizontal; no palatine teeth.. 16. **Breviceps**, p. 176.
- Palatine teeth 17. **Rhombophryne***, p. 177.

IV. Precoracoids present; coracoids directed backwards.

- Pupil erect 18. **Hemisis**, p. 178.

1. RHINODERMA.

Rhinoderma, *Dum. & Bibr.* viii. p. 657; *Günth. Cat.* p. 48; *Cope, Journ. Ac. Philad.* (2) vi. 1867, p. 196.

Pupil horizontal. Tongue subtriangular, entire or slightly nicked and free behind. Vomerine teeth none. Tympanum hidden, or slightly distinct. Fingers with a slight rudiment of web; toes incompletely webbed, the tips not dilated. Outer metatarsals united. Coracoids and precoracoids parallel; a cartilaginous omosternum; a cartilaginous sternum. Diapophyses of sacral vertebra moderately dilated. Terminal phalanges simple.

Chili.

1. *Rhinoderma darwinii*.

Rhinoderma darwinii, *Günth. Cat.* p. 48.

Rhinoderma darwinii, *Dum. & Bibr.* p. 659; *Bell, Zool. Beagle, Rept.* p. 48, pl. 20. f. 1 & 2; *Güichen. in Gay, Hist. Chile*, p. 122, pl. 7. f. 1-10; *Girard, U.S. Expl. Exped., Herp.* p. 71; *Cunningh. Trans. Linn. Soc.* xxviii. p. 468; *Espada, Viaj. Pacif., Vert.* p. 129.

Snout triangular, ending in a dermal lobe; canthus rostralis angular; loreal region vertical; interorbital space broader than the upper eyelid. Fingers moderate, pointed, first shorter than second; toes rather slender, pointed, one-third webbed; subarticular tubercles

* Sternal structure unknown, but the animal stated to be closely allied to *Breviceps*.



h-k. Ad. Valdivia.
l-n. Ad. xys. S. Chili.

Fischer.
James.

of fingers and toes indistinct; a very small inner metatarsal tubercle. The hind limb being carried forwards along the body, the metatarsal tubercle reaches the eye, or somewhat beyond. Skin smooth, granular on the belly and under the thighs; a more or less distinct, narrow, glandular lateral fold; heel with a triangular dermal appendage. Brown above; black below, with large white markings; sometimes the throat and chest white, dotted with blackish. Male with a subgular vocal sac.

Chili.

a-c. ♂.

Chili.

C. Darwin, Esq. [P.].

d, e. ♀.

Chili.

f. ♀.

Isle of Quehuy, Chiloe.

Dr. Cunningham [P.].

g. Skel., ♀.

S. America.

Sir A. Smith [P.].

Atelopus

2. ~~PHRYNISCUS~~

Phryniscus, ~~Wiegman, Nov. Act. 1834, p. 264~~; Günth. Cat. p. 43; Cope, Journ. Ac. Philad. (2) vi. 1867, p. 196.

Chaunus, sp., Tschudi, Batr. p. 87.

Phryniscus, sp., Dum. & Bibr. viii. p. 722.

Atelopus, Dum. & Bibr. viii. p. 660; Günth. Cat. p. 48; Cope, l. c. p. 195.

Phrynidium, Martens, Nomenc. Rept. Mus. Zool. Berol. 1856, p. 40; Cope, l. c. p. 196.

Hylæomorphus, (Fitzing.) Schmidt, Denkschr. Ac. Wien, 1858, p. 255.

Phirix, Schmidt, l. c. p. 256.

Pupil horizontal. Tongue elliptical, entire and free behind. Palate smooth. No tympanic disk. Fingers free or webbed at the base; toes more or less webbed, the tips not dilated into regular disks. Outer metatarsals united. Coracoids and precoracoids more or less divergent, connected by the epicoracoid cartilage; no omosternum; sternum cartilaginous. Diapophyses of sacral vertebra moderately dilated. Terminal phalanges simple.

Tropical America.

Synopsis of the Species.

I. First toe perfectly distinct.

A. Toes not half webbed.

- | | |
|------------------------------------|----------------------------------|
| Snout short, rounded..... | 1. <i>nigricans</i> , p. 150. |
| Snout much produced, truncate..... | 2. <i>proboscideus</i> , p. 150. |

B. Toes at least half webbed.

- | | |
|--|---------------------------------|
| Head as broad as long; snout longer than the diameter of the eye; toes broadly webbed..... | 3. <i>lævis</i> , p. 151. |
| Snout not longer than the diameter of the eye; toes entirely webbed..... | 4. <i>seminiferus</i> , p. 152. |

- Habit slender; tibio-tarsal articulation not reaching beyond the posterior corner of the eye; skin smooth. 5. *varius*, p. 152.
- Habit slender; tibio-tarsal articulation marking the front of the orbit 6. *longirostris*, p. 153.
- Habit slender; tibio-tarsal articulation marking the eye; toes half webbed; skin warty 9. *cruciger*, p. 154.
- Habit slender; tibio-tarsal articulation marking the eye; toes nearly entirely webbed; skin smooth 10. *elegans*, p. 155.
- Habit very slender; tibio-tarsal articulation reaching beyond the eye; toes half webbed; skin smooth 11. *bibronii*, p. 155.

II. First toe quite indistinct.

- Head as broad as long; yellow and brown above 7. *flavescens*, p. 153.
- Head a little longer than broad; black and green above 8. *pulcher*, p. 154.

Atelopus stebyneri

1. *Phryniscus nigricans*.

Phryniscus nigricans, Günth. Cat. p. 43.

(non Wieg.) *Phryniscus nigricans*, *Wieg. Nov. Act.* 1824, p. 264; *Dum. & Bibr.* p. 723; *Bell, Zool. Beagle*, p. 49, pl. 20. f. 3-5; *D'Orbigny, Voy. Amér. mér., Rept.* p. 11, pl. 15. f. 1-4; *Espada, Viaj. Pacif., Vert.* p. 115, pl. 1. f. 9.

Chaunus formosus, *Tschudi, Batr.* p. 87.

* *Phryniscus guttatus*, *Philippi, Arch. f. Naturg.* 1861, p. 300.

Habit stout. Head broader than long; snout short, rounded; interorbital space broader than the upper eyelid. Fore limb shorter than the trunk; fingers short, first a little shorter than second; metacarpal and subarticular tubercles well developed. Hind limb short, the tibio-tarsal articulation reaching hardly the shoulder; toes short, one-third webbed, with prominent double subarticular tubercles; two metatarsal tubercles. Upper surfaces covered with warts. Black, variously spotted with white. Male with a subgular vocal sac.

Uruguay, Buenos Ayres.

- | | | |
|-----------|---------------|-----------------------|
| a-c. ♂ ♀. | Maldonado. | C. Darwin, Esq. [P.]. |
| d. ♂. | Monte Video. | |
| e. ♀. | Buenos Ayres. | E. White [C.]. |
| f. ♀. | S. America. | Sir A. Smith [P.]. |

Atelopus

2. *Phryniscus proboscideus*. (PLATE XIII. fig. 1.)

Habit slender. Head as long as broad, its length contained twice and a half or twice and one fourth in the length of the trunk; snout much produced beyond the lip, truncate; loreal region concave; nostril near the tip of the snout; the diameter of the eye equals its distance from the nostril; interorbital space a little

g-h.	♀	Buenos Ayres.	White.
i-l.	♀	Colow. Resistencia.	Spegazzini.
m-n.	Ad	Camapuan R.	Shering.
o-s.	"	Fruncion, Paraguay.	Bohls.

broader than the upper eyelid. Fore limb moderately slender, as long as the trunk; fingers long and slender, first nearly as long as second; two metacarpal tubercles; subarticular tubercles very prominent. Hind limb moderate, the tibio-tarsal articulation marking the posterior corner of the eye; toes moderate, slender, with a slight rudiment of web, and very prominent subarticular tubercles; two small metatarsal tubercles. Skin entirely covered with small granular tubercles intermixed with larger ones. Yellowish brown, marbled with blackish above and beneath; a very narrow light vertebral line; gular and pectoral regions blackish. From snout to vent 46 millim.

Bahia.

a, b, c. ♀, hgr., & yg.

Bahia.

Atelopus ignescens.

3. ~~*Phryniscus lævis*~~

Phryniscus lævis, Günth. Cat. p. 43, pl. iii. fig. A.

(*Phryniscus ignescens*, Cornalia, Vert. syn. quæ in it. Osculati, &c., p. 316.)*

Phryniscus lævis, Günth. Proc. Zool. Soc. 1859, p. 417.

Phrynidium læve, Cope, Journ. Ac. Philad. (2) vi. 1867, p. 196.

Atelopus lævis, Cope, Proc. Ac. Philad. 1868, p. 117.

— *ignescens*, Espada, Viaj. Pacif., Vert. p. 139, pl. 1. f. 7 & 8.

Habit rather stout. Head as broad as long, its length contained nearly three times in females, twice and one third or twice and a half in males, in the length of the trunk; snout rather protruding, longer than the diameter of the eye; upper surface of head and loreal region concave; nostril slightly nearer the tip of the snout than the eye; interorbital space broader than the upper eyelid. Fore limb shorter than the trunk. Fingers rather short, depressed, webbed at the base, with swollen tips; first finger nearly as long as second; metacarpal and subarticular tubercles distinct, though scarcely prominent. Hind limb moderate, the tibio-tarsal articulation marking the shoulder in females, between the shoulder and the eye (never reaching the latter) in males. Toes rather short, depressed, broadly webbed; subarticular tubercles very indistinct; two more or less distinct, flat metatarsal tubercles. Upper surfaces smooth or with flat warts; sides, upper parts of thigh, and humerus generally with small spiny warts. Male with a subgular vocal sac.

W. S. America.

The specimens show the following varieties of colour:—

A. Above uniform brownish black; beneath yellowish; anal region generally brown.

a-b. ♂ ♀.	Panama.	Mr. Puffeis [C.].	} Types.
c. ♂.	Quito.		
d-e. ♂ ♀.	W. Ecuador.	Mr. Fraser [C.].	
f-g. ♂ ♀.	Intac, Ecuador.	Mr. Buckley [C.].	
h-k. Yg.	Chili?		

* I have been unable to consult this work, and therefore cannot offer an opinion as to the correctness of this reference.

B. Greyish above, marbled with yellow and blackish brown; beneath yellowish, anal region brown.

l-o, p-q. ♂ ♀.
r. ♀.

W. Ecuador.
Paitanga, Ecuador.

Mr. Fraser [C].
Mr. Buckley [C].

C. Purplish brown above, immaculate; limbs green; flanks greenish or purple, white-dotted; greenish yellow beneath.

s, t. ♂.

Paitanga, Ecuador.

Mr. Buckley [C].

D. Bright green, with a few irregular purple spots; greenish yellow beneath, except the belly and thighs, which are orange.

u, v. ♂ ♀.

Intac, Ecuador.

Mr. Buckley [C].

Atelopus

4. ~~Phryniscus~~ *seminiferus*.

Atelopus seminiferus, Cope, *Proc. Ac. Philad.* 1874, p. 130.

Snout viewed from above rounded, truncate, and in profile somewhat prominent; the diameter of the eye equals the length of the snout. Fingers slightly, toes entirely webbed. Body elongate, limbs rather short; the heel marking the scapula. Skin smooth except on the sides, where there are numerous closely-placed minute tubercles from the head to the groin; a broad fold of skin extending from the side to the middle of the length of the femur. Above dark brown; below brownish orange; sides black from head to groin; each tubercle of the skin yellow, resembling yellow grains; limbs uniform black.

Peru.

Atelopus

5. ~~Phryniscus~~ *varius*.

Phryniscus varius, Günth. *Cat.* p. 45.

Atelopus varius, Stannius, *Handb. der Zoot.* 2. Aufl. *Amph.* p. 16; *Keferst. Götting. Nachr.* 1867, p. 350, and *Arch. f. Naturg.* 1868, p. 292, pl. viii. f. 33 & 34.

Phrynidium varium, Martens, *Nomencl. Rept. Mus. Zool. Berol.* p. 40.

Hylæmorphus dumerilii, Schmidt, *Denkschr. Ac. Wien*, 1858, p. 255, pl. 3. f. 23 & 24.

Habit slender. Head longer than broad, its length contained twice and a half or twice and two thirds in females, twice or twice and one third in males, in the length of the trunk; sides of head vertical; snout subacuminate, projecting; nostril much nearer the tip of the snout than the eye; the diameter of the latter equals its distance from the nostril; interorbital space considerably broader than the upper eyelid in females, as broad as, or a little broader than the upper eyelid in males. Fore limb slender, as long as or a little longer than the trunk; fingers moderate, first short but very distinct; one rather indistinct metacarpal tubercle; no subarticular



iii. Many spms. ♂♀ Guatemala. Godman.
n-o. ♀ Bebedero, Costa Rica. Underwood.
(var. with crimson & yellow spots)

a. ♀
b. ♂.

Ecuador.
"

Linnaea.
Werner.

tubercles. Hind limb moderate; the tibio-tarsal articulation marks the posterior corner of the eye in males, does not reach so far in females; toes rather short, first very short but distinct, nearly entirely webbed; no metatarsal nor subarticular tubercles. Skin quite smooth. Two varieties of colour may be distinguished: in both the upper surfaces are black and the lower surfaces yellow; in the first variety the markings of the upper surfaces are crimson, in the other they are greenish yellow; these markings very variable, arranged in spots or in confluent symmetrical bands. Males (probably of the second variety) greyish above dotted with black, the light markings black-edged; an internal subgular vocal sac.

C. America; Colombia.

<i>a-b.</i> ♀, var. 2.	Costa Rica.	Prof. Peters.
<i>c.</i> Many spec. (both varieties): ♂, ♀, & hgr.	Costa Rica.	Messrs. Salvin and Godman [P.].
<i>d-e.</i> ♀, var. 1.	Costa Rica.	O. Salvin, Esq. [C.].
<i>f-h, i-l.</i> ♂ ♀, var. 2.	Costa Rica.	

Atelopus

6. ~~Phryniscus~~ *longirostris*.

Atelopus longirostris, Cope, *Proc. Acad. Philad.* 1868, p. 116; *Espada, Viaj. Pacif., Vert.* p. 155, pl. 2. f. 1 & 2.

— *varius*, Bouleng. *Bull. Soc. Zool. France*, 1880, p. 46.

Very closely allied to *P. varius*, from which it differs in the longer, more pointed, and more prominent snout, and the longer hind limb, the tibio-tarsal articulation marking the front of the eye. Above black; under surfaces and upper lip yellow; a greenish spot on each scapular region, and two or three pairs of the same on each side of the vertebral line.

Ecuador.

Atelopus

7. ~~Phryniscus~~ *flavescens*.

Atelopus flavescens, Günth. *Cat.* p. 48.

Atelopus flavescens, Dum. & Bibr. p. 661.

— *spumarius*, Cope, *Proc. Ac. Philad.* 1871, p. 222.

Habit slender. Head as broad as long, its length contained about twice and a half in females, scarcely more than twice in males, in the length of the trunk; sides of head vertical; snout subacuminate, projecting; nostril much nearer the tip of the snout than the eye; the diameter of the latter equals its distance from the nostril; interorbital space broader than the upper eyelid (as broad as the upper eyelid in one, male, specimen). Fore limb slender, a little longer than the trunk; fingers moderate, first very short, rudimentary; no metacarpal nor subarticular tubercles. Hind limb rather slender, the tibio-tarsal articulation marks the posterior corner of the eye; toes short, first quite indistinct, one-third webbed; no metatarsal nor subarticular tubercles. Skin quite smooth. Bright yellow; upper surfaces dotted and marbled with brown or blackish;

lower surfaces immaculate or marbled with brown on the throat and under the limbs. Male with an internal subgular vocal sac.

E. S. America.

a-c. Hgr.

Demerara Falls.

d-g. ♂ ♀.

Interior of Brazil.

Atelopus

8. *Phryniscus pulcher*. (PLATE XIII. fig. 2.)

Habit slender. Head a little longer than broad, its length contained about twice and a half in females, twice and one third in males, in the length of the trunk; canthus rostralis angular; sides of head vertical; snout subacuminate, truncate, projecting; nostril much nearer the tip of the snout than the eye; the diameter of the latter equals its distance from the nostril; interorbital space broader than the upper eyelid. Fore limb slender, a little longer than the trunk; fingers moderate, first very short, rudimentary; no metacarpal nor subarticular tubercles. Hind limb rather slender, the tibio-tarsal articulation marking the posterior corner of the eye; toes short, first quite indistinct, one-third webbed; no metatarsal nor subarticular tubercles. Skin quite smooth. Blackish brown above, with light green markings, viz. a broad curved streak on each side of the back, a few round spots on the head and back, and stripes across the limbs; lower surfaces carmine, more or less spotted with black. Male with an internal subgular vocal sac.

This species resembles very much *A. flavescens* in general structure, but the head is narrower and the snout shorter. From snout to vent 35 millims.

E. Peru.

a-e. ♂ ♀.

Chyavetas.

Atelopus

9. *Phryniscus cruciger*.

Phryniscus cruciger, Günth. Cat. pp. 44, 136, pl. iii. fig. B.

Phrynidium crucigerum, Martens, Nomencl. Mus. Berol. p. 40.

? *Phirix pachydermus*, Schmidt, Denkschr. Ac. Wien, 1858, p. 256, t. 3. f. 26.

? *Atelopus planispina*, Espada, Viag. Pacif., Vert. p. 148.

Habit slender. Head longer than broad, its length contained three times in females, twice and a half in males, in the length of the trunk; snout prominent, truncate, longer than the diameter of the eyeball; nostril nearer the tip of the snout than the eye; interorbital space broader than the upper eyelid. Fore limb slender, longer than the trunk; fingers webbed at the base, with swollen tips; first finger very short; an indistinct metacarpal tubercle; subarticular tubercles none. Hind limb rather elongate, the tibio-tarsal articulation marking the eye; toes half webbed, inner very short but perfectly distinct; tips of toes swollen; metatarsal tubercles indistinct; subarticular tubercles very indistinct. Upper surfaces with flat warts. Olive above, punctulated with black, and with



f. ♀

Venezuela.

Fischer.

more or less regular black figures; sides black; beneath whitish, immaculate. Male with a subgular vocal sac.

C. America; Venezuela.

a-c. ♂ ♀.

Curanna, Venezuela.

Mr. Dyson.

d-e. ♂.

Central America.

Sir A. Smith [P.].

Atelopus

10. *Phryniscus elegans*.

Habit slender. Head longer than broad, its length contained nearly three times in that of the trunk; sides of head vertical; snout prominent, truncate, not pointed, a little longer than the diameter of the eyeball; nostril nearer the tip of the snout than the eye; interorbital space broader than the upper eyelid. Fore limb slender, longer than the trunk; fingers slightly webbed at the base, first very short; no metacarpal nor subarticular tubercles. Hind limb slender; the tibio-tarsal articulation marks the middle of the eye; toes nearly entirely webbed, inner very short but perfectly distinct; no subarticular nor metatarsal tubercles. Skin perfectly smooth. Light pinkish grey above, vermiculated with broad black lines; a black streak from the tip of the snout, through the eye, along each side of the body to the groin; lower surfaces white, immaculate, except a few small black spots under the limbs.

Ecuador.

a. ♀.

Tanti, 2000 feet.

Edw. Whymper, Esq. [C.].

Atelopus

11. *Phryniscus bibronii*.

Phryniscus bibronii, Günth. Cat. p. 137.

? *Hylæomorphus bibronii*, Schmidt, Denkschr. Acad. Wien, 1858, p. 256, t. 3. f. 25.

Habit very slender. Head longer than broad, its length contained twice and a half in the length of the trunk; sides of head vertical; snout prominent, truncate, not pointed, longer than the diameter of the eyeball; nostril nearer the tip of the snout than the eye; interorbital space broader than the upper eyelid. Fore limb slender, longer than the trunk; fingers webbed at the base, first very short; no metacarpal nor subarticular tubercles. Hind limb very long, the tibio-tarsal articulation reaching the nostril; toes half webbed, inner very short but perfectly distinct; no subarticular nor metatarsal tubercles. Skin perfectly smooth. Whitish above, with broad brown reticulated bands; along the side of head and body a broad brown band; lower surfaces whitish, immaculate.

Colombia.

a. ♀.

Puerto Cabello.

Sir A. Smith [P.].

The examination of a large series of specimens may prove the three latter species not to be specifically separable from one another.

3. BRACHYCEPHALUS.

Brachycephalus, *Fitzing. N. Class. Rept.* p. 39; *Wagl. Syst. Amph.* p. 207; *Tschudi, Batr.* p. 87; *Dum. & Bibr. viii.* p. 726; *Günth. Cat.* p. 46; *Cope, Journ. Ac. Philad. (2)* vi. 1867, p. 197.
Ephippifer, Cocteau, Mag. Zool. Guérin, iii. 1835.

Pupil horizontal. Tongue elliptical, entire and free behind. Palate smooth. No tympanum. Fingers and toes free. Outer metatarsals united. A broad dorsal bony shield, confluent with the processes of the second to seventh vertebræ. Coracoids and pre-coracoids slightly divergent; no omosternum; sternum cartilaginous. Diapophyses of sacral vertebra feebly dilated. Terminal phalanges simple.

South America.

1. *Brachycephalus ephippium*.

Brachycephalus ephippium, *Günth. Cat.* p. 46.

Bufo ephippium, *Spix, Spec. Nov. Test. Ran.* p. 48, t. 20. f. 2.

Brachycephalus ephippium, *Fitz. l. c.*; *Tschudi, l. c.*; *Dum. & Bibr.* p. 729; *Steindachn. Novara, Amph.* p. 35.

Ephippifer spixii, *Coct. l. c.*

— *aurantiacus*, *Coct. l. c.*

Brachycephalus aurantiacus, *Girard, U.S. Expl. Exped., Herp.* p. 100, pl. 5. f. 20-24.

Head moderate, flat, bony; snout short; interorbital space much broader than the upper eyelid. Fingers short, inner very short, rudimentary, outer concealed under the skin; toes short, the inner and the outer indistinct; no subarticular nor metatarsal tubercles. The hind limb being carried forwards along the body, the tarso-metatarsal articulation reaches the eye, or slightly beyond. Skin smooth; dorsal shield rough. Yellowish, bony parts darker.

Guianas; Brazil.

a. Many spec.

Brazil.

Dr. Gardiner [P.].

b-d. Adult.

Tropical America.

C. Darwin, Esq. [P.].

4. MELANOBATRACHUS.

Melanobatrachus, *Beddome, Proc. Zool. Soc.* 1878, p. 722.

Pupil erect. Tongue elliptic, entire and free behind. Palate smooth. No tympanic disk. Fingers free; toes webbed, the tips not dilated. Outer metatarsals united. Coracoids and pre-coracoids nearly parallel, abutting, latter very weak; no omosternum; sternum cartilaginous. Diapophyses of sacral vertebra moderately dilated. Terminal phalanges simple.

India.

Oreophryne quelehi, Blgr.
a. f. ♂ ♀ Summit of Mt. Roraima, 8500 ft.
Quelehi & M^r. Connell. (Types).

Sphenophryne celebensis, F. Müll.
a. b. ♀ & hyp. Motoyia valley, Celebes. Sarawak
(Type).

1. *Melanobatrachus indicus*.

Melanobatrachus indicus, *Beddome, l. c.*

Snout short, blunt, with rather indistinct canthus rostralis; interorbital space broader than the upper eyelid. Fingers short, depressed, first much shorter than second; toes rather short, depressed, one-third webbed; subarticular and metatarsal tubercles very indistinct. The hind limb being carried forwards along the body, the tarso-metatarsal articulation reaches in front of the eye. Upper surfaces tubercular; sides and lower surfaces smooth. Black; tubercles of back greyish; belly dotted with greyish; a large whitish (scarlet) spot on the lower surface of the thigh. Male with a subgular vocal sac.

S.W. India.

a. ♂.	Anamallays, 4000 ft.	Col. Beddome [P.] (One of the types.)
b. ♂.	N. Travancore.	Col. Beddome [P.].
c-g. ♂, ♀, & hgr.	S.W. India, 3000-4500 ft.	Col. Beddome [C.].

5. SPHENOPHRYNE.

Sphenophryne, *Peters & Doria, Ann. Mus. Genov. xiii. p. 430.*

Pupil horizontal. Tongue heart-shaped, free behind. Vomerine teeth none. Tympanum distinct. Fingers and toes free, the tips dilated into distinct disks. Outer metatarsals united. Coracoids dilated, precoracoid weak; no omosternum; sternum a cartilaginous plate. Sacral diapophyses dilated.

New Guinea.

1. *Sphenophryne cornuta*.

Sphenophryne cornuta, *Peters & Doria, l. c. pl. 7. f. 4.*

Physiognomy of *Hyla aurantiaca*. Snout pointed, with distinct canthus rostralis; loreal region nearly vertical; tympanum one third the diameter of the eye. First finger much shorter than second; tips of fingers large, of toes rather smaller; no prominent metatarsal tubercles. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches between the eye and the tip of the snout. Skin smooth above, beneath with small scattered tubercles; a small spiniform tubercle on the upper eyelid. Brown above, blackish spotted and marbled; an irregular blackish line from the chin to the ventral region.

N. Guinea.

6. CALOPHRYNUS.

Calophrynus, *Tschudi, Batr. p. 86; Günth. Cat. p. 54; Cope, Journ. Ac. Philad. (2) vi. 1867, p. 195.*
Berdmorea, *Stoliczka, Proc. As. Soc. 1872, p. 146.*

Pupil horizontal. Tongue elliptic, entire and free behind. Vomerine teeth none. A denticulated dermal ridge across the palate between the choanæ, and another in front of the œsophagus. Tympanum distinct. Fingers free; toes webbed, the tips not dilated into regular disks. Outer metatarsals united. Coracoids broad, abutting; precoracoids weak, parallel with the latter; omosternum and sternum cartilaginous. Diapophyses of sacral vertebra moderately dilated. Terminal phalanges simple.

East Indies; Southern China.

1. *Calophrynus pleurostigma*.

Calophrynus pleurostigma, *Günth. Cat.* p. 54.

Calophrynus pleurostigma, *Tschudi, l.c.*; *Peters, Mon. Berl. Ac.* 1867, p. 33; *Günth. Zool. Rec.* viii. p. 86.

Engystoma interlineatum, *Blyth, Journ. As. Soc.* xxiii. p. 732.

Diplophina interlineatum, *Anders. Proc. Zool. Soc.* 1871, p. 202.

Berdmorea interlineata, *Stoliczka, l.c.*

Snout prominent, truncate; canthus rostralis angular; loreal region vertical; interorbital space broader than the upper eyelid; tympanum nearly as large as the eye. Fingers short, first a little shorter than second, which is longer than fourth; toes short, half webbed, third longer than fifth; tips of fingers and toes slightly swollen; subarticular tubercles very prominent; two small, rather indistinct metatarsal tubercles. The hind limb being carried forwards along the body, the tarso-metatarsal articulation marks the eye. Skin of the back smooth or tubercular, very thick, glandular; belly granular; a more or less distinct lateral fold, commencing from the eye. Brown or reddish above, with or without longitudinal dark stripes; a dark, light-edged round spot on the loin; sides of head and body dark brown; limbs cross-barred.

S. China; Birmah; Borneo.

a. ♀.

Borneo.

b-c. ♀ & hgr.

Pegu.

W. Theobald, Esq. [C.].

2. *Calophrynus punctatus*.

Calophrynus punctatus, *Peters, Mon. Berl. Ac.* 1871, p. 579, and *Ann. Mus. Genov.* iii. p. 43.

Fingers and toes remarkably short; fourth finger extending as far as second; third toe not extending beyond fifth. Dark brown, punctated with black above.

Sarawak.

7. *STEREOCYCLOPS*.

Stereocyclops, *Cope, Proc. Amer. Philos. Soc.* 1869, p. 165.

Pupil round. Tongue large, free behind. Vomerine teeth none. A short frenum across the palate behind. Anterior portion of the

Calophrynus madagascariensis, Blgr.

a. ♀.	East Betsileo.	D. Cowan.
b. Agr.	Madagascar.	"
c. ♂	"	Peraea.
d. ys.	"	Christiania Mus.

d-e. ♀	S. L. Banco.	"
f. ♀	Toungoo.	Oates.
g. Agr.	Mt. Dulit, Borneo.	Hose.
h. ♀	Baram, Borneo.	Everett.
i. ♀	Paitan, N. Borneo.	"
k. n. ♂	Pauls Laut, Natuna Is.	Hose.
o. s. ♂ ♀	Akar R., Sarawak.	"

Scaphiopygus marmorata, Blgr.

n. Agr.	East Betsileo.	D. Cowan.
l. ♀	"Ancaye" Forest.	V. de Robillard.

sclerotica ossified, so as to form a hard annulus round the cornea. Tympanum concealed. Fingers and toes free. Precoracoids present; no omosternum; sternum cartilaginous, much dilated, and entirely in contact with the coracoids.

Brazil.

1. *Stereocyclops incrassatus*.

Stereocyclops incrassatus, Cope, *l. c.*

Physiognomy approaching *Pipa*. Gape large, the muzzle projecting slightly beyond it. Limbs short, humerus and femur included in the skin. Toes very unequal, the inner and outer very short. An obtuse tubercle at the base of the outer toe. Epidermis everywhere thickened by a chitin-like deposit. Colour everywhere leather-brown; a narrow white line from end of muzzle to vent.

Sao Matheos, south of Rio Janeiro.

8. HYPOPACHUS*.

Hypopachus, Keferst. *Götting. Nachr.* 1867, p. 352.

Engystoma, sp., Cope, *Proc. Ac. Philad.* 1866, p. 131.

Systema, sp., Cope, *Journ. Ac. Philad.* (2) vi. 1867, p. 194.

Pupil erect. Tongue elliptic, entire, free behind. Vomerine teeth none. A dermal ridge across the palate between the choanæ, and another in front of the œsophagus. Tympanum hidden. Fingers free; toes with a rudiment of web, the tips not dilated. Outer metatarsals united. Precoracoids present, very weak; no omosternum; sternum cartilaginous. Diapophyses of sacral vertebra moderately dilated. Terminal phalanges simple.

Tropical America.

1. *Hypopachus variolosus*.

Engystoma variolosum, Cope, *Proc. Ac. Philad.* 1866, p. 131, and *Proc. Amer. Philos. Soc.* 1869, p. 166; Brocchi, *Bull. Soc. Philom.* (7) i. p. 192.

Hypopachus seebachii, Keferst. *Götting. l. c.*, and *Arch. f. Naturg.* 1868, p. 293, pl. 9. f. 1 & 2.

Systema variolosum, Cope, *Journ. Ac. Philad.* (2) vi. 1867, p. 194.

Hypopachus variolosus, Cope, *Journ. Ac. Philad.* (2) viii. part ii. p. 101; Brocchi, *Miss. Sc. Mex., Batr.* pl. 10. f. 2.

Snout short, subacuminate, moderately prominent, once and a half the diameter of the eye. Fore limb much longer than its distance from the tip of the snout; fingers moderately clongate. Hind limb stout; it being carried forwards along the body, the tibio-tarsal articulation reaches the shoulder, or nearly as far; toes

* *Copea fulva*, Steindachn. Verh. zool.-bot. Ges. Wien, 1864, p. 286, pl. xvii. f. 5, belongs perhaps to this genus. Hab. Brazil.

with a rudiment of web, the tips blunt; subarticular tubercles distinct; two very prominent, oval, compressed metatarsal tubercles, the inner very large. Skin perfectly smooth; a fold across the head, behind the eyes. Brown above, immaculate or with darker markings; sides and hinder side of thighs marbled with dark brown; a very narrow, indistinct, light vertebral line; beneath brown, spotted with yellowish; generally a very narrow light median line commencing from the chin.

C. America; Para.

<i>a.</i> ♀.	Costa Rica.	O. Salvin, Esq. [C.].
<i>b-c.</i> ♀.	Costa Rica.	
<i>d.</i> ♀.	Para.	Berlin Museum [P.].

2. *Hypopachus inguinalis*.

Hypopachus inguinalis, Cope, *Proc. Am. Phil. Soc.* 1869, p. 166;
Brocchi, Miss. Sc. Mex., Batr. pl. 10. f. 3 & 4.

Engystoma inguinalis, *Brocchi, Bull. Soc. Philom.* (7) i. p. 189.

Snout short, subacuminate, slightly prominent, once and a half the diameter of the eye. Fore limb much longer than its distance from the tip of the snout; fingers moderately elongate. Hind limb moderately stout; it being carried forwards along the body, the tibio-tarsal articulation reaches the shoulder; toes with a rudiment of web, the tips blunt; subarticular tubercles distinct; two very prominent, blunt metatarsal tubercles. Skin smooth, or with small indistinct tubercles; a fold across the head, behind the eyes. Olive-brown or reddish above, marbled with darker; a very narrow carmine line from the tip of the snout to the vent; another along the inner side of the hind limb; a carmine line from the eye to the root of the arm; beneath whitish, marbled with black; generally a very narrow light median line commencing from the chin, meeting another, angular one, across the chest. Male with a subgular vocal sac.

Guatemala; (Ecuador?).

<i>a-e, f-h.</i> ♂, ♀, & hgr.	Coban, Vera Paz.	O. Salvin, Esq. [C.].
<i>i.</i> ♀.	Ecuador.	Mr. Fraser [C.].

9. *ENGYSTOMA* *.

Engystoma, *Fitzing. N. Classif. Rept.* p. 65; *Günth. Cat.* p. 51.

Microps, *Wagl. Isis*, 1828, p. 744, and *Syst. Amph.* p. 200.

Stenocephalus, *Tschudi, Batr.* p. 86.

Engystoma, sp., *Dum. & Bibr.* viii. p. 738; *Cope, Journ. Ac. Philad.*

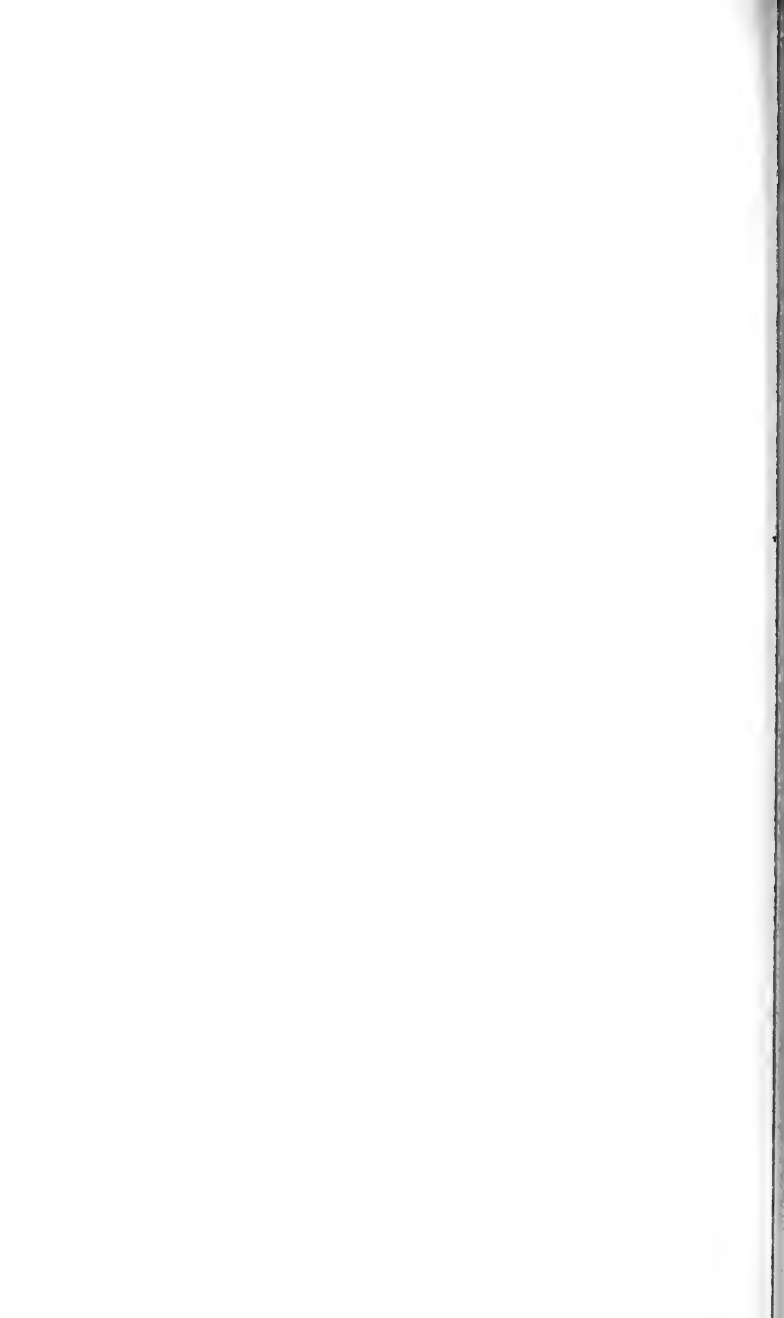
(2) vi. 1867, p. 194.

Systoma, sp., *Cope, l. c.*

* *Engystoma rugosum*, Dum. & Bibr. p. 744.—S. United States.

Hyporhynchus oxyrhynchus, Blgr.
a, b. ♂ Presidio, W. Mexico. Fower, Types
c, f, g. ♀ Duval Co., Texas. Taylor.

e-g. Ad. rhy. Bebedero, Costa Rica. Underwood.



Pupil erect. Tongue elliptic, entire, free behind. Vomerine teeth none. A dermal ridge across the palate between the choanæ, and another in front of the œsophagus. Tympanum hidden. Fingers and toes free, blunt or dilated at the tips. Outer metatarsals united. Coracoids united by a simple cartilage; precoracoids none; no omosternum; sternum cartilaginous. Diapophyses of sacral vertebra moderately dilated. Terminal phalanges simple.

America.

Synopsis of the Species.

I. Two metatarsal tubercles 1. *ustum*, p. 161.

II. A single metatarsal tubercle.

Snout rather obtuse, not twice as long as the diameter of the eye 2. *carolinense*, p. 162.

Snout pointed, projecting, twice as long as the diameter of the eye; hip with a round dark-brown spot 3. *elegans*, p. 162.

Snout pointed, projecting, about twice as long as the diameter of the eye; a whitish streak along the hinder side of the thighs. 4. *ovale*, p. 163.

Snout pointed, strongly projecting, four times as long as the diameter of the eye; tips of toes swollen into regular disks 5. *microps*, p. 163.

1. *Engystoma ustum*.

Engystoma carolinense, part., *Günth. Cat.* p. 51.

Engystoma rugosum, *Günth. l. c.* p. 52.

Engystoma ustum, *Cope, Proc. Ac. Philad.* 1866, p. 131, & 1871, p. 216; *Brocchi, Bull. Soc. Philom.* (7) i. p. 193, and *Miss. Sc. Mex., Batr.* pl. 10. f. 1.

Systoma ustum, *Cope, Journ. Ac. Philad.* (2) vi. 1867, p. 194.

Engystoma mexicanum, *Peters, Mon. Berl. Ac.* 1869, p. 881.

Snout acuminate, moderately projecting, not twice as long as the diameter of the eye. Fore limb considerably longer than its distance from the tip of the snout. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the shoulder, or slightly beyond. Toes quite free, with blunt tips and distinct sub-articular tubercles; two very prominent metatarsal tubercles, inner largest, oval. Skin smooth or with small tubercles on the back; a more or less distinct fold across the head, behind the eyes. Olive or brownish above; generally a light band along each side of the body, and a narrow vertebral line; limbs lighter, thigh and leg each with a broad dark cross band; a white line from angle of mouth to base of arm; beneath marbled with brownish. Male with a subgular vocal sac; the throat deep black.

Mexico.

<i>a-b.</i> ♂ ♀.	Tehuantepec.	Brussels Museum [E.].
<i>c-d.</i> Hgr.	Cordova.	M. Sallé [C.].
<i>e.</i> ♀.	Mexico.	M. Sallé [C.].
<i>f, g.</i> ♀ & hgr.	Mexico.	

2. *Engystoma carolinense*.

- Engystoma carolinense*, part., *Günth. Cat.* p. 51.
Engystoma carolinense, *Holbr. N.-Amer. Herp.* i. p. 83, pl. 2; *Dum.*
 & *Bibr.* p. 743; *Hallow. Proc. Ac. Philad.* 1856, p. 251.
 ——— *olivaceum*, *Hallow. l. c.*
 ——— *texense*, *Girard, Proc. Ac. Philad.* 1859, p. 169.

Snout rather obtuse, slightly projecting, not twice as long as the diameter of the eye. Fore limb considerably longer than its distance from the tip of the snout. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the shoulder in the female, a little beyond in the male. Toes quite free, with blunt tips and distinct subarticular tubercles; a very small inner metatarsal tubercle; no outer tubercle. Skin smooth; a fold across the head, behind the eyes. Brown, dotted with lighter beneath. Male with a subgular vocal sac.

S.E. N. America.

<i>a-b, c.</i> ♂, ♀, & hgr.	New Orleans.	
<i>d.</i> ♂.	N. America.	Edward Doubleday, Esq. [P.].

3. *Engystoma elegans*.

Engystoma carolinense, part., *Günth. Cat.* p. 51.

Snout pointed, projecting, twice as long as the diameter of the eye. Fore limb considerably longer than its distance from the tip of the snout. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches in front of the shoulder; toes quite free, with blunt tips and distinct subarticular tubercles; a very small, very indistinct, inner metatarsal tubercle; no outer tubercle. Skin perfectly smooth; a fold across the head, behind the eyes. Light brown above; back with an irregular broad dark band; sides of head and body dark brown; hip with a round dark-brown spot; thigh, leg, and tarsus each with a broad dark-edged cross band; belly marbled with brown; throat brown, marbled with whitish.

In coloration this species resembles *E. ustum*, from which it differs in having a single, hardly distinct, metatarsal tubercle. From *E. ovale* it differs in the longer hind limbs; and from *E. carolinense* in the latter character and in the longer, more pointed snout.

Mexico.

<i>a.</i> ♀.	Cordova.	M. Sallé [C.].
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i. ♂ ♀ Presidio, W. Mexico. Forrer.
 ♀ Agua Delgada, Guadalupe. Buller.

♀ Duval Co, Texas. Taylor.
 ♀ Pensacola, Fla. Bollman.
 ♀ Key West, " Mus. Comp. Zool.
 ♀ Duval Co, Texas. Taylor.

Engystoma leucostictum, Btg.
 a. ♀ Sta. Catharina. Michaëlis (Tz)
 b. ♀ Theresopolis, Sta. Catharina. Fruhstorfer

Engystoma albopunctatum, Btg.
 a-e. ♂♀ Asuncion, Paraguay. Bohls.

e-g. ♀ Rio Grande do Sul. Thering
 (var. bicolor, Valenc)
 h-i. ♂♀ Cayes, Sta. Catharina. Michaëlis.
 k-p. ♂♀ Pto Real, R. Janeiro. Hardy
 q-u. ♂♀ Asuncion, Paraguay. Bohls.

Engystoma muelleri, Btg.
 a-h. ♂♀ sjs. Asuncion, Paraguay. Bohls.

4. *Engystoma ovale*.*Engystoma ovale*, *Günth. Cat.* p. 51.*Rana ovalis*, *Schweid. Hist. Amph.* p. 13; *Shaw, Zool.* iii. p. 3.*Bufo surinamensis*, *Daud. Rain.* pl. 33. f. 2, and *Rept.* viii. p. 184.— *ovalis*, *Daud. Rain.* p. 92, and *Rept.* viii. p. 187.*Rana bufonia*, *Merr. Tent.* p. 177.*Engystoma ovale*, *Fitz. Neue Classif. Rept.* p. 65; *Dum. & Bibr.* p. 741; *Steindachn. Verh. zool.-bot. Ges. Wien*, 1864, p. 285, pl. 18. f. 4.*Oxyrhynchus bicolor*, (*Valenc.*) *Guérin, Icon. Rept.* pl. 27. f. 2.*Microps unicolor*, *Wagl. Syst. Amph.* p. 200.*Stenocephalus microps*, *Tschudi, Batr.* p. 88.

Snout pointed, projecting, about twice as long as the diameter of the eye. Fore limb short, longer than its distance from the tip of the snout; fingers short, first shorter than second. The hind limb being carried forwards along the body, the tibio-tarsal articulation does not reach the shoulder; toes quite free, with blunt tips and distinct subarticular tubercles; a very small inner metatarsal tubercle; no outer tubercle. Skin perfectly smooth; a fold across the head, behind the eyes. Brown above; lower surfaces lighter, marbled with brown; a whitish streak along the hinder side of the thighs. Male with a subgular vocal sac, and the throat black.

S. America.

a. ♀.

Bogotá.

b. ♀.

America.

c-d. ♂ ♀.

— ?

5. *Engystoma microps*.*Engystoma microps*, *Günth. Cat.* p. 52.*Engystoma microps*, *Dum. & Bibr.* p. 744; *Steindachn. Verh. zool.-bot. Ges. Wien*, 1864, p. 285, pl. 15. f. 3.

Snout very long, pointed, strongly projecting; eyes very small, one fourth the length of the snout. Fore limb very short, as long as its distance from the tip of the snout; fingers very short, first shorter than second. Hind limb very stout; it being carried forwards along the body, the tibio-tarsal articulation reaches the shoulder; toes quite free, the tips swollen into regular disks; first toe very short; subarticular tubercles indistinct; a very small, scarcely distinct, inner metatarsal tubercle; no outer tubercle. Skin perfectly smooth. Dark brown above, more or less dotted with whitish; light brown beneath, immaculate.

Brazil; Guiana.

a-d. ♀.

Demerara Falls.

10. MICROHYLA.

Microhyla, *Tschudi, Batr.* p. 71; *Dum. & Bibr.* viii. p. 613; *Günth. Cat.* p. 121; *Cope, Journ. Ac. Philad.* (2) vi. 1867, p. 193.

Hylaplesia, sp., *Boie, Isis*, 1827, p. 294.

Engystoma, sp., *Dum. & Bibr. viii.* p. 738; *Cope, l. c.* p. 194.

Diplopelma, *Günth. Cat.* p. 50.

Scaptophryne, *Fitzing. Sitz. Ak. Wien*, xlii. p. 146.

Ranina, *David, Nouv. Arch. Mus.* vii. 1872, *Bull.* p. 76.

Pupil erect. Tongue elliptic, entire, free behind. Vomerine teeth none. A cutaneous ridge across the palate between the choanæ, and another in front of the œsophagus. Tympanum hidden. Fingers free; toes more or less webbed, sometimes very slightly; tips of fingers and toes blunt or more or less dilated. Outer metatarsals united. Coracoids united by a simple epicoracoid cartilage; pre-coracoids none; no omosternum; sternum cartilaginous. Diapophyses of sacral vertebra moderately dilated. Terminal phalanges simple.

China; East Indies.

Synopsis of the Species.

- | | |
|---|-------------------------------|
| Toes very slightly webbed; metatarsal tubercles strong, compressed | 1. <i>rubra</i> , p. 164. |
| Toes webbed at the base; metatarsal tubercles very small; tibio-tarsal articulation not reaching beyond the eye | 2. <i>ornata</i> , p. 165. |
| Tibio-tarsal articulation reaching the tip of the snout, or beyond; toes half webbed, the tips not dilated | 3. <i>pulchra</i> , p. 165. |
| Toes webbed at the base, the tips dilated into well-developed disks | 4. <i>achatina</i> , p. 166. |
| Toes entirely webbed, the tips dilated into well-developed disks | 5. <i>berdmorii</i> , p. 166. |

1. *Microhyla rubra.*

Diplopelma ornatum, part., *Günth. Cat.* p. 50.

Engystoma rubrum, *Jerdon, Journ. As. Soc.* xxii. 1853, p. 534.

Habit stout. Snout rounded, a little shorter than the orbital diameter; interorbital space broader than the upper eyelid. Fingers moderate, first much shorter than second; toes moderate, one-third webbed; tips of fingers and toes not swollen; subarticular tubercles very distinct: two rather large, oval, compressed, very prominent metatarsal tubercles, outer somewhat larger than inner. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches somewhat beyond the shoulder, never to the eye. Skin smooth. Reddish brown above, sides darker; a dark-brown line from the tip of the snout through the eye along the side of the back to the groin; a dark-brown mark across the thigh, beginning on the loin; limbs with more or less distinct cross bars; sometimes a dark X-shaped marking on the front of the back, commencing between the eyes; beneath immaculate, or with a few brown dots

Microhyla fissipes, Blgr. -

v. ♀ Taiwanfoo, S. Formosa.

c. ♂ ♀ Loo Choo Islands.

af. ♂ ♀ Great Loo Choo I.?

gh. ♂ ♀ C. Formosa.

(Type).

Pryor.

Holst.

"

k. ♀

Moulmein.

Theobald.

g. ♀

Penang.

Anderson.

h. Many spec. ♂ & ♀. Penang.

Theobald.

i-x ♂ & ♀.

Moulmein

"

y-z. ♀

Hong Kong.

Walker.

aa-dd. Hs. Ning Kong jow. S. W. of Ningpo.

ee. ♀ Da laer salu. S. W. of Ningpo. Walker.

ff. ♀ Thayetmyo, Burma. Watson.

on the throat. Male with a subgular vocal sac; the throat black.

India.

<i>a-b.</i> ♀.	Assam.	T. C. Jerdon, Esq. [P.].
<i>c.</i> Many spec.: ♂, ♀, hgr., & yg.	Madras.	T. C. Jerdon, Esq. [P.].
<i>d.</i> Skeleton.	Madras.	T. C. Jerdon, Esq. [P.].
<i>e-g.</i> ♀.	S. India.	T. C. Jerdon, Esq. [P.]. (As typical of <i>Engystoma rubrum</i> .)
<i>h.</i> ♀.	Ceylon.	Col. Beddome [C.].
<i>i.</i> ♂.	Ceylon.	W. Ferguson, Esq. [P.].

2. *Microhyla ornata*.

Diplopelma ornatum, part., *Günth. Cat.* p. 50.

Engystoma ornatum, *Dum. & Bibr.* p. 745.

— *carnaticum*, *Jerdon, Journ. As. Soc.* 1853, p. 534.

? *Engystoma malabaricum*, *Jerdon, l. c.*

Diplopelma ornatum, part., *Günth. Rept. Brit. Ind.* p. 417.

— *carnaticum*, *Stoliczka, Journ. As. Soc.* 1870, p. 154, pl. 9. f. 5.

Habit moderately slender. Snout obtuse, as long as or a little longer than the orbital diameter; interorbital space broader than the upper eyelid. Fingers rather slender, first much shorter than second; toes rather slender, with a slight rudiment of web; tips of fingers and toes swollen into very small disks; subarticular tubercles very distinct; two small, subequal, metatarsal tubercles. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches between the shoulder and the eye, never beyond the latter. Skin smooth. Reddish or greyish olive above, with a large dark marking on the back, beginning between the eye and becoming broader as it extends to the hind part of the body; on each side of this marking are undulating longitudinal dusky lines, which may be absent; a dark band along the side of the head and body; limbs with dark cross bars; throat and chest generally greyish or brownish, dotted with white; the remainder of the lower surfaces immaculate. Male with a subgular vocal sac.

China; India.

<i>a.</i> ♂.	Ningpo.	
<i>b-f.</i> ♂ ♀.	Szechuen.	R. Swinhoe [C.].
<i>g.</i> ♀.	Gamboja.	M. Mouhot [C.].
<i>h-i.</i> ♀.	Assam.	T. C. Jerdon, Esq. [P.].
<i>k-l.</i> Hgr.	Madras.	T. C. Jerdon, Esq. [P.].
<i>m.</i> Hgr.	Madras.	W. T. Blanford, Esq. [P.].
<i>n.</i> ♀.	India.	Sir E. Belcher [P.].
<i>o-p.</i> ♂.	India.	Dr. Leith [P.].

3. *Microhyla pulchra*.

Diplopelma ornatum, part., *Günth. Cat.* p. 50.

Engystoma pulchrum, *Hallow. Proc. Ac. Philad.* 1860, p. 506.

- Diplopelma pulchrum*, *Günth. Rept. Brit. Ind.* p. 417; *Steindachn. Novara, Amph.* p. 36, pl. 2. f. 15-18.
Scaptophryne labyrinthica, *Fitzing. Sitz. Ak. Wien*, xlii. p. 416.
Ranina symmetrica, *David, Nouv. Arch. Mus.* vii. *Bull.* p. 76.

Habit slender. Snout subacuminate, a little longer than the orbital diameter; interorbital space as broad as the upper eyelid. Fingers rather slender, first much shorter than second; toes long, half webbed; tips of fingers and toes not dilated; subarticular tubercles very distinct; two very small metatarsal tubercles. Hind limb very long, the tibio-tarsal articulation reaching the tip of the snout, or beyond. Skin smooth. Olive, greyish, or pinkish brown above, beautifully marked with darker and lighter **A**-like lines on the back, and transverse lines across the limbs; a cross streak between the eyes, a large **A**-shaped marking on the back, and a streak from the eye to the middle of the side dark brown; throat and chest clouded with brown; the remainder of the lower surfaces immaculate. Male with a subgular vocal sac.

China; Gamboja.

a, b. ♂.	Hong Kong	J. C. Bowring, Esq. [P.].
c. ♀.	China.	Mr. Adams [C.].
d. ♀.	China.	
e. Hgr.	Gamboja.	M. Mouhot [C.].

4. *Microhyla achatina*.

Microhyla achatina, *Günth. Cat.* p. 121.

Hylaplesia achatina, *Boie, Isis*, 1827, p. 294.

Microhyla achatina, *Tschudi, Batr.* p. 71; *Dum. & Bibr.* p. 614;

Peters & Doria, Ann. Mus. Genov. xiii. p. 428.

Diplopelma disciferum, *Peters, Mon. Berl. Ac.* 1867, p. 36.

Habit slender. Snout subacuminate, longer than the orbital diameter; interorbital space broader than the upper eyelid. Fingers rather slender, first much shorter than second; toes slender, webbed at the base; tips of fingers swollen into very small, of toes into well-developed disks; subarticular tubercles distinct; two small metatarsal tubercles. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the tip of the snout, or beyond. Skin smooth. Brown above; sides and a streak between the eyes dark brown; sometimes the back with rather indistinct chevron-shaped darker and lighter lines and a narrow light vertebral line; limbs more or less distinctly cross-barred; anal region blackish.

Java; Moluccas.

a. ♀.	Java.	Leyden Museum.
b-c. ♀.	Posata, Bantam.	
d. ♀.	— ?	

5. *Microhyla berdmorei*.

Engystoma berdmorei, *Blyth, Journ. As. Soc.* xxiv. p. 710.

Callula natatrix, *Cope, Journ. Ac. Philad.* (2) vi. 1867, p. 192.

Microhyla innata, Bly.

b. ♂ ♀
d. ♀

Deli, Sumatra.
Karin hills.

Moesch (Types)
Fea.

f. ♀
g. ♀

Macao.
Hong Kong.

Anderson?
Walker.

f. ♂ ♀
g. ♀
h. ♀

Mainee.
Deli, Sumatra.
Java.

Henry.
Moesch.
Frickstorfer.

f. ♀ Pera-Kaw. Camboja. Héron-Royen

Diplopelma berdmorei, *Günth. Zool. Rec.* iv. p. 146; *Anders. Proc. Zool. Soc.* 1871, p. 202; *Stoliczka, Proc. As. Soc.* 1872, p. 109.

Habit slender. Snout obtuse, as long as, or a little longer than, the orbital diameter; interorbital space broader than the upper eyelid. Fingers slender, with slightly swollen tips; first finger much shorter than second; toes long, webbed to the tips, which are dilated into rather large disks; subarticular tubercles very distinct; two very small metatarsal tubercles. Hind limb very long; it being stretched forwards along the body, the tibio-tarsal articulation reaches beyond the tip of the snout. Skin smooth, or with a few scattered indistinct tubercles on the back and sides. Brownish, olive or pinkish above; a darker, light-edged, hourglass-shaped, large spot on the front part of the back, beginning between the eyes, sometimes continued on the hind part of the back; black spots on the sides of the limbs and occasionally on the flanks; a chevron-shaped black marking on the anal region; throat and chest clouded with brown; the remainder of the lower surfaces immaculate.

Birmah.

a-c. ♀.
d-e. ♀.

Pegu.
Birmah.

W. Theobald, Esq. [C].
W. Theobald, Esq. [C].

11. CALLULA.

Kaloula, *Gray, Zool. Misc.* p. 38; *Günth. Cat.* p. 122.

Hylædactylus, *Tschudi, Batr.* p. 85; *Dum. & Bibr.* viii. p. 732.

Plectropus, *Dum. & Bibr.* p. 736.

Holonectes, *Peters, Mon. Berl. Ac.* 1863, p. 455.

Calohyla, *Peters, l. c.*

Callula, *Günth. Rep. Brit. Ind.* p. 436; *Cope, Journ. Ac. Philad.* (2) vi. 1867, p. 192.

Pupil erect. Tongue oblong, entire and free behind. Vomerine teeth none. Palatine bone forming an acute, sometimes toothed ridge across the palate. Two cutaneous, more or less distinctly denticulated ridges across the palate, in front of the œsophagus. Tympanum hidden. Fingers free; toes more or less webbed (exceptionally free), the tips more or less dilated. Outer metatarsals united. No precoracoids; no omosternum; sternum cartilaginous. Diapophyses of sacral vertebra moderately dilated. Terminal phalanges triangular or T-shaped.

East Indies.

Synopsis of the Species.

I. Toes at least one-third webbed.

Tips of fingers slightly swollen 1. *picta*, p. 168.

Tips of fingers dilated into large disks;
metatarsal tubercles moderately large . . 2. *conjuncta*, p. 168.

Tips of fingers dilated into well-developed
disks; outer metatarsal tubercle minute. 3. *obscura*, p. 169.

II. Toes webbed at the base.

- Inner metatarsal tubercle large, blunt-edged 4. *baleata*, p. 169.
 Inner metatarsal tubercle large, sharp-edged 5. *pulchra*, p. 170.
 Metatarsal tubercles small, scarcely prominent 6. *olivacea*, p. 171.
 III. Toes perfectly free 7. *triangularis*, p. 171.

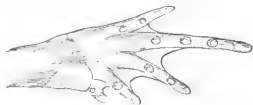
1. *Callula picta*.

Kaloula picta, part., *Günth. Cat.* p. 123.

Plectropus pictus, (*Bibr.*) *Eyd. & Soul. Voy. Bonite, Rept.* pl. 9. f. 2;

Dum. & Bibr. p. 737; *Peters, Mon. Berl. Ac.* 1863, p. 455.

Callula picta, *Günth. Rept. Brit. Ind.* p. 436.



Lower surface of foot.

Snout short, blunt, a little longer than the diameter of the eye; interorbital space as broad as the upper eyelid. Fingers slender, with slightly swollen tips, first a little shorter than second; toes moderate, nearly half webbed, with slightly swollen tips, fifth much shorter than third; subarticular tubercles well developed; metatarsal tubercles two, oval, compressed, the inner very large. The hind limb being carried forwards along the body, the tarso-metatarsal articulation reaches the eye. Upper surfaces with small scattered smooth tubercles; a fold from the eye to the shoulder. Olive above, with large dark spots, confluent on the middle of the back; sides of head and body dark; beneath, speckled with greyish or brownish; the male's throat blackish. Male with a subgular vocal sac.

Philippine Islands.

- | | |
|-----------|-----------------|
| a. ♂. | Philippines. |
| b-c. Hgr. | Negros. |
| d. ♂. | Laguna del Bay. |
| e-f. ♂. | — ? |

Dr. A. B. Meyer [C.]
 Dr. A. B. Meyer [C.]
 J. C. Bowring, Esq. [P.]

2. *Callula conjuncta*.

Hylædactylus (*H. lonectes*) *conjunctus*, *Peters, Mon. Berl. Ac.* 1863, p. 455; *Steindachn. Verh. zool.-bot. Ges. Wien*, 1864, p. 256, pl. 11. f. 5.

Callula conjuncta, *Cope, Journ. Ac. Philad.* (2) vi. 1867, p. 192.

Snout short, blunt, as long as the orbital diameter; interorbital space broader than the upper eyelid. Fingers moderate, the tips dilated into large truncated disks; first finger shorter than second; toes moderate, half webbed, the tips dilated into small disks; sub-

Aggr.

Manila.

Walker.

i. k. Ad. & juv. Newer'sa Ellia, 7000 ft. Green.

articular tubercles distinct, two metatarsal tubercles, inner moderately large, blunt. The hind limb being carried forwards along the body, the tarso-metatarsal articulation reaches the eye or a little beyond. Skin smooth, or with a few indistinct tubercles on the back; a more or less distinct fold across the head behind the eyes. Olive above, with a large dark marking on the back; sides of head and body dark; beneath indistinctly marbled.

Philippines.

a-c, d. ♀ & hgr.

Philippines.

3. *Callula obscura*. (PLATE XIII. fig. 3.)

Callula obscura, Günth. *Rept. Brit. Ind.* p. 438.

? *Hylædactylus montanus*, Jerdon, *Journ. As. Soc.* xxii. 1853, p. 533.

Snout short, rounded, as long as or a little longer than the orbital diameter; interorbital space broader than the upper eyelid. Fingers moderate, the tips dilated into well-developed truncated disks; first finger shorter than second; toes moderate, one-third or half webbed, the tips slightly swollen; subarticular tubercles distinct; two small metatarsal tubercles, the inner oval, blunt, scarcely prominent, the outer minute, rounded. The hind limb being carried forwards along the body, the tarso-metatarsal articulation reaches the eye or the tip of the snout. Skin smooth, or with small flat tubercles on the head and back; a fold from the eye to the shoulder. Above brownish or greyish with blackish angular markings, sometimes uniform blackish brown; beneath blackish brown spotted with whitish. Male with a subgular vocal sac.

Ceylon; S. India.

<i>a.</i> ♂.	Ceylon.	Sir A. Smith [P.]. (Type.)
<i>b-c.</i> Hgr.	Ceylon.	G. H. K. Thwaites, Esq. [P.].
<i>d.</i> ♀.	Ceylon.	
<i>e.</i> ♀.	Travancore.	Col. Beddome [C.].
<i>f.</i> ♂.	Anamallays.	Col. Beddome [C.].
<i>g.</i> Many sp.: ♂, ♀, & hgr.	Malabar.	Col. Beddome [C.].
<i>h.</i> ♀.	—?	T. C. Jerdon, Esq. [P.].

4. *Callula baleata*.

Kaloula baleata, Günth. *Cat.* p. 122.

Bombinator baleatus, Müll. *Verhandel. Batav. Genootsch.* 1836, p. 96.

Hylædactylus baleatus, Tschudi, *Batr.* p. 85; *Dum. & Bibr.* p. 734.

Kaloula baleata, Steindachn. *Novara, Amph.* p. 68.



Lower surface of hand.



Lower surface of foot.

Snout short, rounded, as long as the orbital diameter; interor-

bital space broader than the upper eyelid. Fingers moderate, the tips strongly dilated, truncated; first finger shorter than second; toes rather short, webbed at the base, the tips swollen into small disks; subarticular tubercles distinct; metatarsal tubercles two, oval, inner large, compressed, with blunt edge. The hind limb being carried forwards along the body, the tarso-metatarsal articulation reaches between the shoulder and the eye. Skin smooth, or with small flat warts on the upper surfaces; a fold from the eye to the shoulder, and another, more or less indistinct, across the head behind the eyes. Brown, olive, or blackish above, uniform or variegated with darker; frequently large whitish spots on the arm-pits, on the loins, and on the limbs; beneath brown, variegated with whitish. Male with a subgular vocal sac.

Java; Celebes; Philippines.

a-b, c. ♂ ♀.

d. ♀.

e-i, k. ♂ ♀.

l-m. Hgr.

n. ♀.

o. Hgr.

Java.

Java.

N. Celebes.

Laguna del Bay.

— ?

— ?

Leyden Museum.

Dr. Bleeker [C.].

Dr. A. B. Meyer [C.].

Dr. A. B. Meyer [C.].

5. *Callula pulchra*.

Kaloula pulchra, Günth. *Cat.* p. 123.

Kaloula pulchra, Gray, *Zool. Misc.* p. 38; *Steindachn. Novara, Amph.* p. 68.

Hylædactylus bivittatus, Cantor, *Cat. Mal. Rept.* p. 143.

Callula pulchra, Günth. *Rept. Brit. Ind.* p. 436; *Stoliczka, Journ. As. Soc.* 1870, p. 155.

? *Callula variegata*, *Stoliczka, Proc. As. Soc.* 1872, p. 111.



Lower surface of hand.



Lower surface of foot.

Snout short, rounded, as long as the orbital diameter; interorbital space broader than the upper eyelid. Fingers rather slender, the tips dilated into well-developed, truncated disks; first finger shorter than second; toes moderate, slightly webbed at the base, the tips swollen; subarticular tubercles well developed; metatarsal tubercles two, oval, inner large, compressed, with sharp edge. The hind limb being carried forwards along the body, the tarso-metatarsal articulation reaches the shoulder, or a little beyond. Skin of back with flat smooth tubercles: a fold from the eye to the shoulder, and another, more or less distinct, across the head behind the eyes. Light brown or pinkish above, generally with a large dark-brown spot covering

p.	♀	Palembang. C. Sumatra.	Forbes.
g.	♀	Nias	Sandemann.
v.	♂	Ulu's Mt., Java.	"
t.	♀	Mt. Dulit, Borneo.	Hose.
w.	♂ ♀	Akar R., Sarawak.	"

q. Agr.	Toungoo.	Oates.
r-u. ♀ & hgr.	Toungyi, Shan States.	5000 ft.
		Blakeway
v-x. ♂.	Hoi-How, Hainan.	Neumann.
y. Ys.	Bangkok.	Greening.
z. ♀	Hong Kong.	Walker.

e. Agr.	Phanda, C. India.	Blanford
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nearly the whole of the back, and a dark lateral band; sometimes with confluent spots; beneath immaculate or marbled with brownish. Male with a subgular vocal sac.

India; S. China; Celebes.

<i>a, b.</i> ♀ & hgr.	China.	J. Reeve, Esq. [P.].
<i>c, d-e.</i> Hgr. & yg.	China.	
<i>f.</i> Hgr.	Moulmein.	R. C. Beavan, Esq. [P.].
<i>g.</i> Hgr.	Birmah.	F. Day, Esq. [P.].
<i>h.</i> ♀.	Gamboja.	M. Mouhot [C.].
<i>i-k.</i> ♂ ♀.	Siam.	M. Mouhot [C.].
<i>l.</i> ♂.	Pinang.	Dr. Cantor.
<i>m.</i> ♂.	Ceylon.	Dr. Kelaart.
<i>n.</i> ♀.	Ceylon.	W. Ferguson, Esq. [C.].
<i>o.</i> ♂.	Ceylon.	Col. Beddome [P.].
<i>p.</i> ♀.	Cavery.	Col. Beddome [P.].

6. *Callula olivacea*.

Callula olivacea, *Günth. Proc. Zool. Soc.* 1875, p. 576, pl. 64. f. B.

Snout short, obtusely prominent, as long as the orbital diameter; interorbital space broader than the upper eyelid. Fingers rather slender, the tips dilated, truncate; toes moderate, not dilated at the ends, with a slight rudiment of web; subarticular tubercles not very prominent; two small, scarcely prominent metatarsal tubercles, the inner elongate. The hind limb being carried forwards along the body, the tarso-metatarsal articulation reaches hardly the posterior border of the eye. Body rather elongate. Skin nearly smooth; a fold from the eye to the shoulder. Olive above, marbled with dark brown; belly whitish, immaculate. Male with a subgular vocal sac.

W. India.

<i>a-b.</i> ♂.	Yellagherry Hills.	Col. Beddome [P.]. (Types.)
<i>c.</i> ♀.	Godavery near Bhadrachalam.	W. T. Blanford, Esq. [P.].
<i>d.</i> ♀.	Godavery valley.	W. T. Blanford, Esq. [P.].

7. *Callula triangularis*. (PLATE XIII. fig. 4.)

Callula triangularis, *Günth. Proc. Zool. Soc.* 1875, p. 576.

Snout short, blunt, as long as the orbital diameter; interorbital space broader than the upper eyelid. Fingers moderate, the tips dilated into rather small truncated disks; toes moderate, perfectly free, the tips not dilated; subarticular tubercles well developed; two small metatarsal tubercles, inner largest, oval, blunt. The hind limb being carried forwards along the body, the tarso-metatarsal articulation reaches the shoulder, or in the middle between the shoulder and the eye. Skin smooth, or with some flat tubercles on the back; a fold from the eye to the shoulder, and another across the head behind the eyes. Light olive above, with a large triangular blackish spot occupying nearly the whole length of the back; sides and lower surfaces blackish brown, latter spotted with whitish; limbs

blackish brown, with large light-olive spots. Male with a subgular vocal sac.

S. W. ~~Hindustan~~ *India*.

a. Many spec.: ♂, ♀, & hgr. Malabar. Col. Beddome [P.].
(Types).
b, c. ♀ & hgr. Nilgherries. W. Theobald, Esq. [P.].

12. XENOBATRACHUS.

Xenobatrachus, *Peters & Doria, Ann. Mus. Genov. xiii. p. 432.*

Pupil — ? Tongue heart-shaped, free behind. Palatine bones each with two large curved teeth. Tympanum distinct. Fingers and toes free, with swollen tips. Outer metatarsals united. Sternal apparatus as in *Callula*. Diapophyses of sacral vertebra dilated.

New Guinea.

1. *Xenobatrachus ophiodon*.

Xenobatrachus ophiodon, *Peters & Doria, l. c. pl. 7. f. 5.*

Head small; snout rounded; tympanum half the size of the eye. First finger a little shorter than second; tips of fingers and toes swollen into very small disks; no metatarsal tubercles. The hind limb being carried forwards along the body, the heel reaches nearly the tip of the snout. Skin everywhere smooth. Brown above, irregularly spotted and marbled with blackish; whitish beneath, the throat and chest reticulated with brown.

N. Guinea.

13. PHRYNOMANTIS.

Brachymerus, *Smith, Ill. S. Afr., Rept.; Günth. Cat. p. 124; Cope, Nat. Hist. Rev. 1865, p. 102.*

Phrynomantis, *Peters, Mon. Berl. Ac. 1867, p. 35; Cope, Journ. Ac. Philad. (2) vi. 1867, p. 192.*

Pupil erect. Tongue large, oblong, nicked behind. Vomerine teeth none. A cutaneous fold across the palate, between the choanæ. Tympanum hidden. Fingers and toes free, the tips dilated into regular disks; outer metatarsals united. Precoracoids none; no omosternum; sternum cartilaginous. Diapophyses of sacral vertebra strongly dilated. Terminal phalanges T-shaped.

Africa; Austro-Malaysia.

1. *Phrynomantis bifasciata*.

Brachymerus bifasciatus, *Günth. Cat. p. 124.*

Brachymerus bifasciatus, *Smith, l. c. pl. 63; Peters, Arch. f. Naturg. 1855, p. 58.*

Phrynomantis bifasciata, *Peters, Mon. Berl. Ac. 1867, p. 36.*

Habit rather stout. Head small; snout rounded, longer than the orbital diameter; interorbital space broader than the upper eyelid. Fingers moderate, first shorter than second; toes short; disks of

a ♂

Milgherries.

Thurston.

- a. b. ♂
 c. ♂
 d. g. ♂ ♀
- Phrynella pulchra, Blyth.
 Malacca. Hervey.
 Deli, Sumatra. Moesch.
 Sereim, Mentawai Id. Modigliani.

- a. ♂
- Phrynella pollicaris, Blyth.
 Perak, 3000 ft. Wray (Type).

- a. b. ♂
- Caecosternum nanum, Blyth.
 Oles, Kaffraria. Weale (Type)

- ♀
- Callulops doxia, Blyth.
 Milne Gulf, N. Guinea. H. J. Forbes (Type)

k. Ys.
l. ♀

Mombasa.
Mkomumbi, E. Africa.

Wilson.
Gregory.

fingers large, of toes rather smaller; subarticular tubercles distinct; a very small inner metatarsal tubercle. Hind limb very short; it being carried forwards along the body, the tip of the longest toe marks the eye or the tip of the snout. Skin quite smooth; a fold from the eye to the shoulder; a more or less distinct flat gland on the coccygeal region (this is probably the remains of a larval character). Dark brown above; lighter beneath, spotted with whitish. Male with a subgular vocal sac.

South-eastern, South-western, and Southern Africa.

VAR. A. A white (or red), sometimes interrupted streak on each side of the body, beginning on the upper eyelid; a white subtriangular or heart-shaped marking on coccygeal region; limbs spotted with white. The male's throat black.

a-c. ♂, ♀, & yg. S. Africa.

Sir A. Smith [P.].

d-e. Hgr. —?

Sir A. Smith [P.].

VAR. B. Similar to the preceding, but the space between the white bands with dark and light longitudinal lines; markings on the legs arranged in cross bars.

f-g. ♂ & hgr. Shiré valley, Zambesi.

h. ♀. Zambesi Expedition.

Dr. Livingstone [C.].

VAR. C. Upper surfaces with large round light spots; no light bands.

i. ♂. Angola.

J. J. Monteiro [C.].

2. *Phrynomantis microps*.

Phrynomantis microps, *Peters, Mon. Berl. Ac.* 1875, p. 210, pl. 4. f. 6.

Differs from the preceding in the smaller head and shorter feet. Head and back reddish white; sides and limbs black, latter spotted with white; beneath blackish, spotted with reddish.

Gold Coast.

3. *Phrynomantis fusca*.

Phrynomantis fusca, *Peters, Mon. Berl. Ac.* 1867, p. 35; *Peters & Doria, Ann. Mus. Genov.* xiii. p. 429.

Snout short, hardly as long as the diameter of the eye. Fifth toe shorter than third. Brown or blackish, lighter beneath, with irregular white lines and small spots; forearm and tarsus with slightly distinct cross streaks. Otherwise as in *P. bifasciata*.

Amboyna; Batanta.

14. CACOPUS.

Systema, (non *Wagler*) *Tschudi, Batr.* p. 86.

Uperodon, *Dum. & Bibr.* viii. p. 48.

Cacopus, *Günth. Rept. Brit. Ind.* p. 415.

Pachybatrachus, *Keferst. Arch. f. Naturg.* 1868, p. 273.

Systoma, sp., *Cope, Journ. Ac. Philad.* (2) vi. 1867, p. 193.

Pupil erect. Tongue oval, entire and free behind. Choanæ very large, with a dermal movable flap, which can close the nostril; two small bony prominences close together, between and on a level with the hinder edge of the choanæ; a small papilla on the hind margin of each choana; a narrow denticulated dermal ridge across the sphenoidal region; another, very broad, in front of the œsophagus. Tympanum hidden or very indistinct. Fingers free; toes webbed at the base, the tips not dilated. Outer metatarsals united. Pre-coracoids none; sternum a large cartilaginous plate. Diapophyses of sacral vertebra rather strongly dilated. Terminal phalanges simple.

India.

1. *Cacopus systoma*.

Uperodon marmoratum, *Günth. Cat.* p. 49.

Rana systoma, *Schneid. Hist. Amph.* i. p. 144; *Peters, Mon. Berl. Ac.* 1863, p. 82.

Engystoma marmoratum, *Cuv. R. A.*; *Guérin, Icon. Rept.* pl. 27, f. 3.

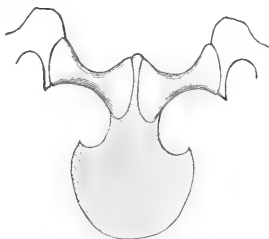
Systoma leschenaultii, *Tschudi, Batr.* p. 86.

Uperodon marmoratum, *Dum. & Bibr.* p. 749.

Cacopus systoma, *Günth. Rept. Brit. Ind.* p. 415.

Systoma marmoratum, *Steindachn. Novara, Amph.* p. 36.

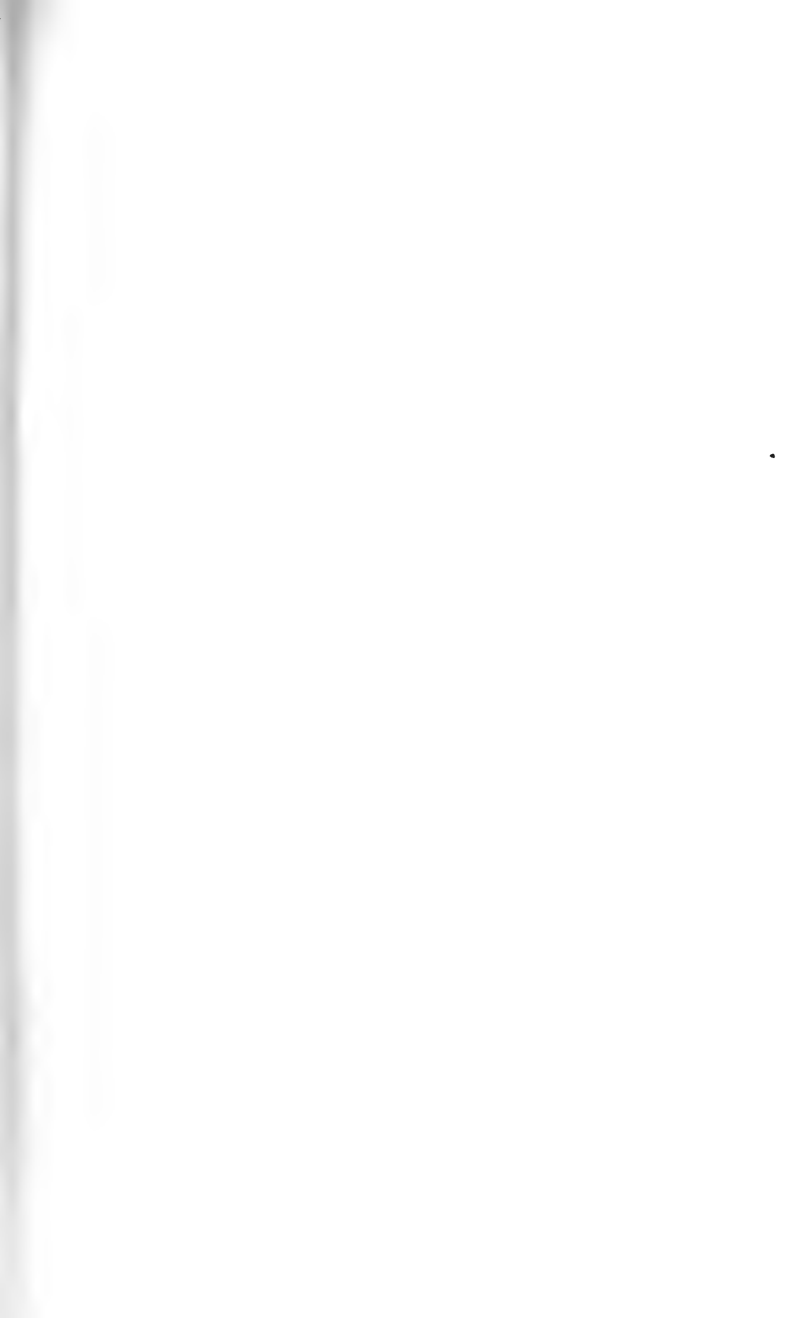
? *Pachybatrachus petersii*, *Keferst. Arch. f. Naturg.* 1868, p. 274, pl. 6. f. 8-10.



Sternal apparatus.

Habit very stout. Head small; mouth small; snout rounded, without canthus rostralis, as long as or slightly longer than the diameter of the orbit; interorbital space twice or not quite twice the width of the upper eyelid. Fingers moderate, first a little shorter than second; toes rather short, webbed at the base; subarticular tubercles generally rather indistinct; two strong, compressed, shovel-shaped, metatarsal tubercles, inner very large, as long as second toe. Hind limb short. Skin smooth, upper surfaces sometimes tubercular. Olive or pinkish brown above, marbled with blackish brown; beneath whitish, immaculate. Male with a sub-gular vocal sac.

India.





<i>a-c.</i> ♂ & hgr.	Madras.	T. C. Jerdon, Esq. [P.].
<i>d.</i> ♀, skeleton.	Madras.	T. C. Jerdon, Esq. [P.].
<i>e.</i> Several spec.: ♂, ♀, hgr., & yg.	Balarangam Hills.	Col. Beddome [C.].
<i>f-h.</i> ♀ & hgr.	Plains of India.	Col. Beddome [C.].
<i>i.</i> ♀.	India.	
<i>k.</i> ♂.	—?	Sir A. Smith [P.].

2. *Cacopus globulosus*.

Cacopus globulosus, *Günth. Rept. Brit. Ind.* p. 416, pl. 26. f. K;
Anders. Proc. Zool. Soc. 1871, p. 201.

Systoma globulosum, *Cope, Journ. Ac. Philad.* (2) vi. 1867, p. 194.

Differs from the preceding in the following points:—Habit stouter, globular; snout longer (measuring nearly twice the orbital diameter), with distinct but obtuse canthus rostralis; interorbital space three times the width of the upper eyelid; inner metatarsal tubercle longer than second toe. Brown, uniform or spotted with darker.

Madras Presidency.

<i>a, b.</i> ♀ & yg.	Russelconda.	Dr. Trail [P.]. (Types.)
<i>c-d.</i> ♀ & hgr.	Russelconda.	Col. Beddome [C.].

15. GLYPHOGLOSSUS.

Glyphoglossus, *Günth. Proc. Zool. Soc.* 1868, p. 483.

Pupil erect. Tongue elongate, notched behind and in front, divided into two lateral halves by a deep groove, extensively free behind, slightly so in front. A papilla in the median line of the hinder part of the palate; a denticulated cutaneous ridge across the palate, in front of the œsophagus. Tympanum hidden. Fingers free; toes webbed, the tips not dilated. Precoracoids and omosternum absent; sternum a cartilaginous plate. Diapophyses of sacral vertebra moderately dilated. Terminal phalanges simple.

India.

1. *Glyphoglossus molossus*.

Glyphoglossus molossus, *Günth. l. c.* pl. 38. f. 1.

Head very short, crown convex; mouth very narrow; canthus rostralis none; eye very small; the fleshy part of the lower jaw swollen, truncated in front, forming a semicircular disk. Limbs very short. Fingers short, pointed, first and second equal, fourth very short; toes short, pointed, entirely webbed; subarticular tubercles distinct; two metatarsal tubercles, the inner extremely large, compressed, sharp-edged, the outer small, rounded. Skin smooth. Uniform brownish olive above, sides and limbs finely marbled with brown; lower parts whitish, immaculate.

Birmah.

<i>a.</i> ♀ (?).	Pegu.	W. Theobald, Esq. [C.]. (Type.)
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16. BREVICEPS.

Breviceps, *Merr. Tent.* p. 178; *Dum. & Bibr.* viii. p. 752; *Cope, Nat. Hist. Rev.* 1865, p. 102, and *Journ. Ac. Philad.* (2) vi. 1867, p. 191. *Systoma*, *Wagl. Syst. Amph.* p. 205; *Tschudi, Batr.* p. 47.

Pupil horizontal. Tongue oval, entire and free behind. Palate papillose. Tympanum hidden or slightly distinct. Fingers and toes free, the tips not dilated. Outer metatarsals united. Coracoids very much dilated; precoracoids well developed; no omosternum; sternum very small, cartilaginous. Sacral vertebra with very strongly dilated diapophyses, confluent with coccygeal style. Terminal phalanges simple.

Africa.

1. *Breviceps gibbosus*.

Breviceps gibbosus, *Günth. Cat.* p. 53.

Seba, ii. 37. 3.

Bufo acephalus, *Klein, Quadr. Disp.* p. 121.

Rana gibbosa, *Linn. Mus. Ad. Frid.* p. 48, and *S. N.* p. 355.

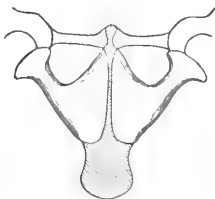
Bufo gibbosus, *Laur. Syn.* p. 27; *Latr. Rept.* ii. p. 119; *Daud. Rain.* p. 80, pl. 29. f. 1, pl. 35. f. 2, and *Rept.* viii. p. 158.

Breviceps gibbosus, *Merr. Tent.* p. 178; *Gravenh. Delic.* p. 69; *Dum. & Bibr.* p. 754; *Smith, Ill. S. Afr., Rept., App.* p. 27.

Engystoma dorsatum, *Cuv. R. A.*

— *granosum*, *Cuv. R. A.*

Systoma breviceps, *Wagl. Syst. Amph.* p. 205; *Tschudi, Batr.* p. 86.



Sternal apparatus.

Habit extremely stout. Head very short; snout indistinct; mouth small; eyes rather small, directed forwards. Limbs very short; first and second fingers nearly equal; outer toe not longer than inner; subarticular tubercles distinct; a very large shovel-shaped inner metatarsal tubercle. Upper surfaces with small warts; belly granulate. Brown above, with a broad brownish-yellow serrated dorsal band; an obsolete lateral streak of the same colour.

S. Africa.

a. Adult. *skel.*

S. Africa.

b, c. Young.

S. Africa.

d. Adult.

Cape of Good Hope.



g. Agr.	L. Nyassa.	Universities Mus.
h. ♀	Cape of Good Hope.	Fisk.
i. Yg.	"	Christiania Mus.

d.	Guissange, Angola.	Bocage.
e. Yg.	Delagoa Bay.	Monteur.
f. "	Port Elizabeth	Leslie.
g. "	"	Spencer.
h. Agr.	Delagoa Bay.	S. African Mus.
i. Yg.	Zululand.	Christiania Mus.
k. Agr.	Shire highlands.	Johnston.
l. Yg.	Swambo, Brit. C. Africa.	Carson.

a-b. ♂♀	Nossi Bé.	Linnaea
c-d. ♂♀	"	over long Mus.
e-h. Agr.	"	Deyrolle.
f. ♀ skel.	"	Senckenberg Mus.

2. *Breviceps verrucosus*.*Breviceps verrucosus*, *Günth. Cat.* p. 52.*Breviceps verrucosus*, *Rapp, Arch. f. Naturg.* 1842, p. 289, pl. 6. f. 5;
Smith, Ill. S. Afr., Rept., App. p. 27; *Steindachn. Novara, Amph.*
p. 38.

Snout more or less distinct. Entirely covered with distinctly porous granular glands. Brown, with or without yellowish spots. Perhaps not specifically distinct from the preceding.

S. Africa.

a, b. ♂ ♀.

c. Hgr.

d-f. ♂ ♀. *App.*

S. Africa.

Cape of Good Hope.

Kaffraria.

Sir A. Smith [P.].

K. P. M. Weale, Esq. [P.].

3. *Breviceps mossambicus*.*Breviceps mossambicus*, *Peters, Arch. f. Naturg.* 1855, p. 58.

Skin quite smooth, or indistinctly glandular on the head and front part of the back. Brown or blackish above; a dark oblique streak below the eye.

E. Africa.

a. ♂.

b. ♂.

c. ♂.

Mossambique.

Zambesi River.

River Donda.

Prof. Peters [P.].

17. RHOMBOPHRYNE.

Rhombophryne, *Boettg. Zool. Anz.* 1880, p. 567.

Pupil — ? Tongue large, broad, and very long, entire, free on the sides, longitudinally grooved. A non-interrupted series of palatine teeth. A cutaneous fold across the palate, between the choanae. Tympanum concealed. Fingers and toes free, the tips not dilated. Madagascar.

The sternal structure is not known. But as Dr. Boettger has described this genus as allied to *Breviceps*, it is provisionally placed here.

1. *Rhombophryne testudo*.*Rhombophryne testudo*, *Boettg. l. c.* p. 568.

Habit stout. Head very broad and short; snout very obtuse; mouth small; eyes small. Skin glandular, the glandules spinulose on the snout and on the chin; a fold from the eye to the shoulder. Greyish brown above, the glandules and folds lighter; a blackish streak on the loreal and temporal regions; hinder side of thighs white, distinctly separated from the inferior side by a blackish zone. Yellowish brown beneath, indistinctly vermiculated with whitish.

Nossi Bé.

18. **HEMISUS** *.

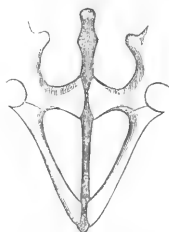
Hemismus, *Günth. Cat.* p. 47; *Cope, Nat. Hist. Rev.* 1865, p. 100, and *Journ. Ac. Philad.* (2) vi. 1867, p. 199.
Kakophrynus, *Steindachn. Sitz. Ak. Wien*, xlviii. 1863, p. 191.

Pupil erect. Tongue subtriangular, broader in front. A cutaneous ridge across the palate, between the choanæ, and another in front of the œsophagus. No tympanum. Fingers free; toes free or slightly webbed at the base, the tips not dilated. Outer metatarsals united. Coracoids and precoracoids subequal in bulk; precoracoids horizontal, coracoids very obliquely directed backwards, latter connected with former by the simple epicoracoid cartilage; omosternum cartilaginous; sternum rudimentary. Diapophyses of sacral vertebra slightly dilated. Terminal phalanges simple.

Africa.

1. **Hemismus guttatum.**

Hemismus guttatum, part., *Günth. Cat.* pp. 47 & 137.
Engystoma guttatum, *Rapp, Arch. f. Naturg.* 1842, p. 290, pl. 6. f. 3 & 4; *Smith, Ill. S. Afr., Rept., App.* p. 27.



Sternal apparatus.

Habit stout. Head small; snout rather pointed, prominent, cuneiform; mouth small; lower jaw with three prominences in front; eye small; interorbital space broad. Fore limb short, clumsy, adapted for burrowing; fingers very short, pointed, first and second equal, fourth shorter. Hind limb short, the tarso-metatarsal articulation marking the eye; toes short, pointed, free, without subarticular tubercles; a small inner metatarsal tubercle. Skin smooth; a fold across the head, behind the eyes. Brown above, with round whitish spots. Male with a subgular vocal sac.

S. Africa.

a. ♂.

Natal.

Sir A. Smith [P.].

2. **Hemismus sudanense.**

Hemismus guttatum, part., *Günth. Cat.* pp. 47 & 137.
 ? *Engystoma marmoratum*, *Peters, Arch. f. Naturg.* 1855, p. 58.

* *Hemismus obscurus*, Grandid. *Ann. Sc. Nat.* (5) xv. a. 20, p. 11.—Madagascar.



g. Agr. Kilimanjaro. Jackson.
Ch. K. ♂♀. Wathen, R. Congo. Mr. Bentley.

Kakophrynus sudanense, Steindachn. Sitz. Ak. Wien, xlviii. p. 191 pl. 1. f. 10-13.

Hemisus sudanense, Steindachn. Verh. zool.-bot. Ges. Wien, 1864, p. 284.

Differs from the preceding species in the following points :—Snout acutely pointed; toes with a distinct rudiment of web; metatarsal tubercle large, shovel-shaped; subarticular tubercles more or less distinct. Brownish or olive above, marbled with blackish; sides sometimes spotted with white; sometimes a light vertebral line.

E. and W. Africa.

a. Hgr.	Kordofan.	
b. ♂.	Coast of Guinea.	Sir A. Smith [P.] (As <i>Engystoma guineense</i> .)
c. ♀.	Benguela.	J. J. Monteiro, Esq.
d. ♀.	W. Africa.	
e. Hgr.	Africa.	Sir A. Smith [P.] (As <i>Engystoma vermiculatum</i> .)
f. Adult, bad state.	Africa.	(From the stomach of a <i>Lep-todira rufescens</i> .)

The following genera probably belong to this family; but as the sternal structure has not been described, I cannot refer them to their proper place :—

XENORHINA, Peters, Mon. Berl. Ac. 1863, p. 82.

“Habit of *Engystoma*; toes free, with distinct disks; fingers free, without disks; jaws and palate toothless; tongue broad, heart-shaped, adherent everywhere except a little in front; end of snout warty, nostrils lateral, at the tip of the snout; tympanum distinct; no parotoids. Palmar and plantar surfaces smooth, without tubercles. Diapophyses of sacral vertebra dilated.”

X. oxycephala, Peters, l. c. (*Bombinator oxycephalus*, Schlegel, Handl. Dierk. ii. p. 58, t. iv. f. 74).—New Guinea.

ADENOMERA (Fitz.), Steindachn. Novara, Amph. p. 37.

“Head rather small, indistinct from the body; snout distinct, pointed; fingers and toes free; tongue narrow, elongate, entire; tympanum distinct; a large, flat gland on the loins; prominence of the first cuneiform bone elongate, pointed, small; no vomerine nor maxillary teeth; diapophyses of the sacral vertebra weak, triangular.”

A. marmorata (Fitz.), Steindachn. l. c.—Brazil.

4. DYSCOPHIDÆ.

Upper jaw toothed; diapophyses of sacral vertebra dilated.

The characters of this family are the same as those of the preceding, except that the upper jaw is furnished with teeth. *Calluella* may be considered a toothed *Hypopachus*, and *Cophyla* a toothed *Callula*. The precoracoids are either very weak, not taking any share in the formation of the glenoid cavity, or absent. There is no fronto-parietal fontanelle. The pupil is erect.

Synopsis of the Genera. *See p. 473.*

Precoracoids present; sternum very large; tips of fingers and toes not dilated 1. **Dyscophus**, p. 180.

Precoracoids present; sternum small; tips of fingers and toes not dilated 2. **Calluella**, p. 181.

Precoracoids none; sternum small; tips of fingers and toes dilated. 3. **Cophyla**, p. 182.

1. **DYSCOPHUS.**

Dyscophus, *Grandid. Ann. Sc. Nat.* (5) xv. 1872, a. 20, p. 10.

Pupil erect. Tongue oval, entire and free behind. Vomerine teeth in a long series across the palate. A cutaneous, denticulated fold across the palate, between the choanæ. Tympanum distinct or hidden. Fingers free; toes webbed, the tips not dilated. Outer metatarsals united. Coracoids strong; precoracoids weak, imperfectly ossified, resting upon coracoids; omosternum cartilaginous; sternum a very large anchor-shaped cartilaginous plate. Diapophyses of sacral vertebra moderately dilated. Terminal phalanges simple.

Madagascar.

1. **Dyscophus insularis.**

Dyscophus insularis, *Grandid. l. c.*

= *D. antongilii* (Kaloula guineti, *Grandid. Ann. Sc. Nat.* (6) ii. a. 6, and *Bull. Soc. Philom.* (7) i. p. 41.)

Vomerine teeth in a long transverse series, interrupted in the middle. Tympanum hidden. A shovel-shaped metatarsal tubercle. Head and body smooth, flanks and belly granular. Reddish brown above, vermiculated with darker brown; the markings bordered with very narrow yellow lines; flanks reddish; belly reddish brown.

Madagascar.

? a. Skin.

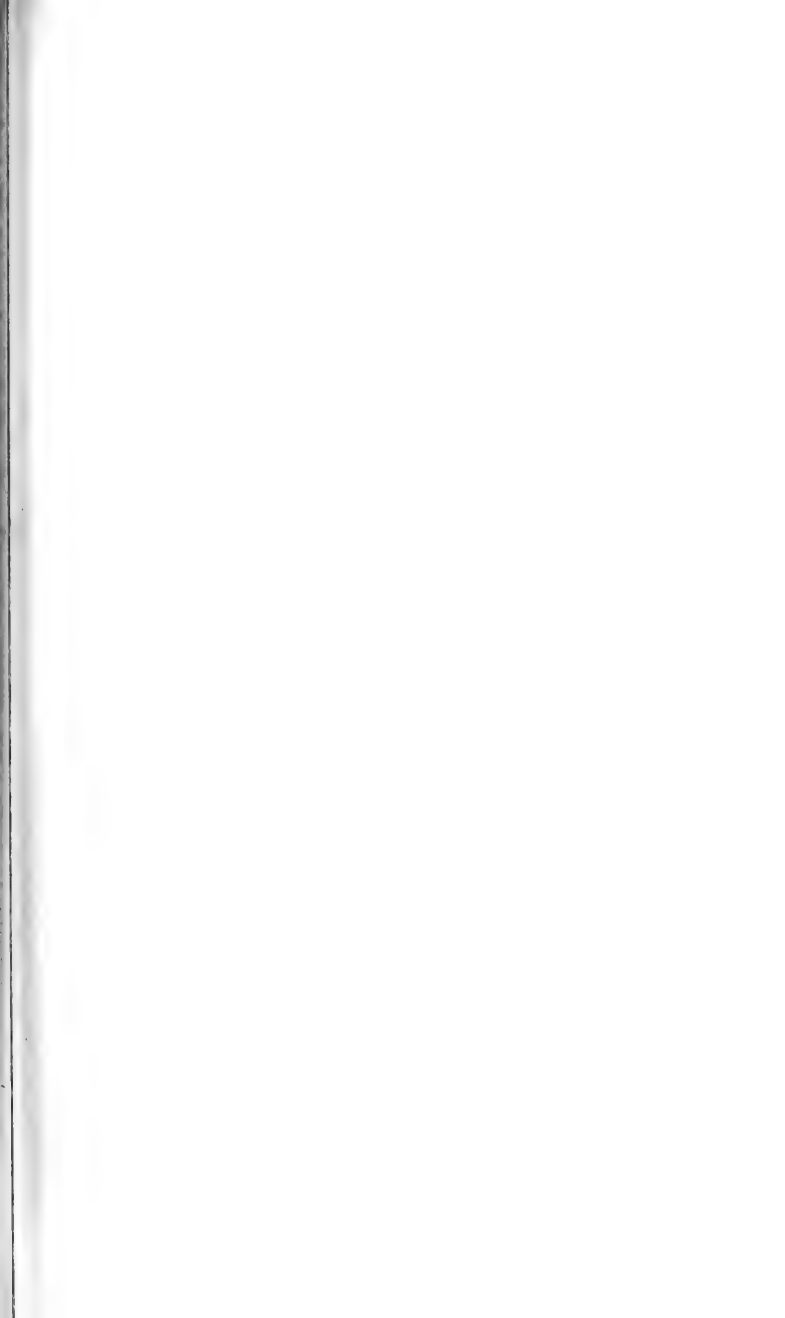
Madagascar.

2. **Dyscophus(antongilii) guineti**

Dyscophus insularis, var. *antongilii*, *Grandid. Bull. Soc. Philom.* (7) i. p. 41.

— sanguineus, *Boettger, Zool. Anz.* 1880, p. 567.

Vomerine teeth in a long, scarcely interrupted series across the palate, behind the choanæ. Snout short, rounded; canthus rostralis slightly distinct; interorbital space a little broader than the upper eyelid; tympanum distinct, vertically oval, its vertical diameter two thirds the greatest diameter of the eye. First and second fingers equal; toes one-third webbed; tips of fingers and toes blunt; subarticular tubercles well developed; inner metatarsal tubercle rather strong, oval, compressed, with blunt edge; no outer tubercle. The hind limb being carried forwards along the body, the tarso-

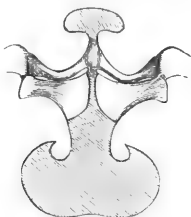


d-e. ♀

"-Incaze" Forest.

V. de Robillan

metatarsal articulation reaches in front of the eye. Skin of upper surfaces smooth or indistinctly tubercular, strongly porous; upper eyelid tubercular; a fold uniting the hinder edges of the upper eyelids; another from the eye to the shoulder; a broad glandular



Sternal apparatus.

fold from the eye to near the groin; lower surfaces smooth. Beautiful magenta-red above; a purplish streak beneath the glandular lateral fold; yellowish white beneath, with very minute grey specks.

Madagascar.

a-c. ♀.

Antongili Bay.

2. CALLUELLA.

Calluella, *Stoliczka, Proc. As. Soc.* 1872, p. 146.

Pupil erect. Tongue oval, entire and free behind. Vomerine teeth in a transverse interrupted series across the palate. Two cutaneous folds across the palate, the front one between the choanæ. Tympanum hidden. Fingers free; toes webbed, the tips not dilated. Outer metatarsals united. Coracoids strong; precoracoids very weak, imperfectly ossified, resting upon coracoids; no omosternum; sternum a small cartilaginous plate. Diapophyses of sacral vertebra moderately dilated. Terminal phalanges simple.

India.

1. *Calluella guttulata*.

Megalophrys guttulata, *Blyth, Journ. As. Soc.* xxiv. p. 717.

Callula guttulata, *Günth. Proc. Zool. Soc.* 1868, p. 490, pl. 40. f. 1.

Calluella guttulata, *Stoliczka, l. c.*

Head small; snout short, rounded; interorbital space broader than the upper eyelid. Fingers moderate, first a little shorter than second; toes moderate, not one-third webbed; tips of fingers and toes blunt; subarticular tubercles well developed; inner metatarsal tubercles large, shovel-shaped; outer metatarsal tubercle none or indistinct. The hind limb being carried forwards along the body,

the metatarsal tubercle reaches the eye. Skin perfectly smooth; a rather indistinct fold across the head, behind the eyes; another fold from the eye to the shoulder. Upper parts pink or yellowish olive, coarsely marbled with brown, the brown marks edged by a black line; a long transverse black mark across the vent and hinder surface of thighs; beneath immaculate; the male's throat blackish. Latter with a subgular vocal sac.

Pegu; Birmah.

a-d. ♂ ♀.

e. ♀.

f. Hgr.

Pegu.

Birmah.

— ?

W. Theobald, Esq. [C.].

W. Theobald, Esq. [C.].

R. C. Beavan, Esq. [P.].

3. ~~COPHYLA~~. *Plethodontohyla*

~~Cophyla, Boettger, Zool. Anz. 1880, p. 281.~~

Pupil erect. Tongue oval, entire and free behind. A long series of palatine teeth behind the choanæ. Tympanum more or less indistinct. Fingers free, toes free or webbed at the base, the tips dilated into regular disks. Outer metatarsals united. Coracoids strong; precoracoids and omosternum absent; sternum cartilaginous, very small. Diapophyses of sacral vertebra slightly dilated. Terminal phalanges T-shaped.

Madagascar.

Plethodontohyla.

1. ~~Cophyla~~ notosticta.

Callula notosticta, Günth. Ann. & Mag. N. H. (4) xix. p. 316, pl. 16. f. C.

Snout short, rather pointed, with distinct canthus rostralis; inter-orbital space broader than the upper eyelid. Fingers moderate, first much shorter than second, the tips dilated into large disks; toes moderate, free, the disks smaller than those of the fingers; subarticular tubercles rather indistinct; metatarsal tubercle indistinct. The hind limb being carried forwards along the body, the tarso-metatarsal articulation reaches between the eye and the tip of the snout. Skin everywhere smooth; a narrow glandular fold from the eye along the side of the body. Upper parts pinkish brown, with symmetrical dark-brown markings; a pair of whitish, black-edged dots on the sacral region; sometimes a few other pairs of similar spots on the head and back; sides of head blackish; canthus rostralis, edge of upper eyelid, and glandular lateral fold pink; beneath light brown, indistinctly speckled with darker. Male with a subgular vocal sac.

Madagascar.

a. ♂.

b-c. ♀ & hgr.

Mahanoro. {

Anzahamara. {

Types.

d. Several ♂ spec. Madagascar. Magast.

Platyhyla grandis, Blgr.
v. b. ♂ & ♀ Madagascar, Majaster (Isles)

Mantipus hildebrandti, Pters.
v. c. ♀ sys. - Madagascar. Bourc.

Plethodonthyla sinuata, Blgr.
v. ♀ L. Betsileo L. Couan.

Plethodon thyra brevipes, Blgr.
v. ♀ L. Betsileo L. Couan.

a. ♂ *11.000* '65'. *Trach. long. mus.*
f

Platyphelis cowanii, Bly.
a. ♀ (Type) *E. Betsileo* *G. Cowan.*

Platyphelis pollicaris, Bly.
a. ♂ *Tzhet. Madagascar.* *Baron.*

Phrynotara tuberculatum Pts.
a. ♀ *Madagascar.* *Peracca.*

1 ♀. *Cophyla phyllodactyla*.

Cophyla phyllodactyla, *Boettg. l. c.*

Snout obtuse. Toes webbed at the base. Skin smooth, granular on the belly and under the thighs; a fold from the eye to the arm. Greyish brown above, with transverse blackish-brown **A**- or **M**-shaped spots: legs more or less distinctly cross-barred.

Nossi Bé.

B. ARCIFERA.

Bufoformia, part., and Arcifera, *Cope, Nat. Hist. Rev.* 1865, and *Journ. Ac. Philad.* (2) vi. 1866.

Bufoformia and Arcifera, *Cope, Check-list of N.-Amer. Batr. & Rept., Bull. U.S. Nat. Mus.* i. 1877.

Coracoids and precoracoids divergent, connected by an arched cartilage (the epicoracoid), which is free from, and generally overlaps, the corresponding cartilage of the opposite side.

5. CYSTIGNATHIDÆ.

Ranidæ, part., Cystignathidæ, part., Discoglossidæ, part., Alytidæ, part., Uperolidæ, Bombinatoridæ, part., Hylodidæ, part., *Günth. Cat. Batr. Sal.*

Scaphiopodidæ, part., Cystignathidæ, *Cope, Nat. Hist. Rev.* 1865.

Cystignathidæ, *Cope, Journ. Ac. Philad.* (2) vi. 1866.

Bombinatoridæ, part., Plectromantidæ, Alytidæ, part., Polypedatidæ, part., Ranidæ, part., Discoglossidæ, part., *Mivart, Proc. Zool. Soc.* 1869.

Upper jaw toothed; diapophyses of sacral vertebra not, or but slightly, dilated; terminal phalanges never claw-shaped.

The omosternum is always destitute of a bony style, and may be rudimentary. The sternum is generally a cartilaginous or more or less ossified plate, and provided with a bony style in a few genera only.

The vertebræ are procœlian and without ribs. The diapophyses of the sacral vertebra are usually cylindrical, sometimes slightly dilated, most conspicuously so in *Chiroleptes* and allies. Nevertheless these genera distinctly belong to this family, and cannot be confounded with the *Pelobatidæ*, in which the dilatation of the sacral diapophysis is much stronger, or with the *Hylidæ*, in which the terminal phalanges are quite different. The coccyx is articulated by two condyles, and without diapophyses.

A great number of species have a fronto-parietal fontanelle, but, as in *Bufo* and *Hyla*, this character does not seem to me to be of generic importance. A few species have the skin of the head replaced by a rugose cranial ossification, *Calyptocephalus* showing

one of the highest degrees of cranial ossification which a Frog can attain.

The auditory organ exhibits all the possible degrees of development. Several genera, viz. *Crinia*, *Hylodes*, &c., prove that too great an importance has been attached to the modifications of this organ, and in most cases I must refuse to admit them as generic characters.

The distal phalanges are simple, or with divergent terminal processes.

Most of the Australian representatives of this family, and a few of the American, have the pupil erect.

The *Cystignathidæ* include arboreal, aquatic, terrestrial, and burrowing types.

Synopsis of the Genera.

I. Outer metatarsals completely separated; sternum without bony style; toes webbed.

Pupil horizontal; first finger opposite to the others; tongue circular.

1. *Pseudis*, p. 185.

Fingers webbed; tips of fingers and toes dilated into large disks.

2. *Centrolene*, p. 187.

Pupil erect; tongue circular; tympanum distinct.

3. *Mixophyes*, p. 188.

Tongue oval; tympanum hidden .. 4. *Cyclorhamphus*, p. 189.

II. Outer metatarsals united or incompletely separated.

A. Sternum without bony style; toes webbed.

Pupil horizontal; head rough, entirely bony, the orbit completely enclosed; tongue entire 5. *Calyptocephalus*, p. 189.

Pupil horizontal; derm of head free from cranial ossification; tongue entire 6. *Telmatobius*, p. 190.

Pupil horizontal; tongue nicked behind.

10. *Ceratophrys*, p. 221.

Pupil vertical; first finger opposite to the others; diapophyses of sacral vertebra slightly dilated .. 23. *Chiroleptes*, p. 267.

Pupil vertical; tympanum concealed; diapophyses of sacral vertebra slightly dilated 24. *Heleioporus*, p. 271.

B. Sternum without bony style; toes free, or nearly so.

1. Tips of fingers and toes dilated into regular disks; pupil horizontal.

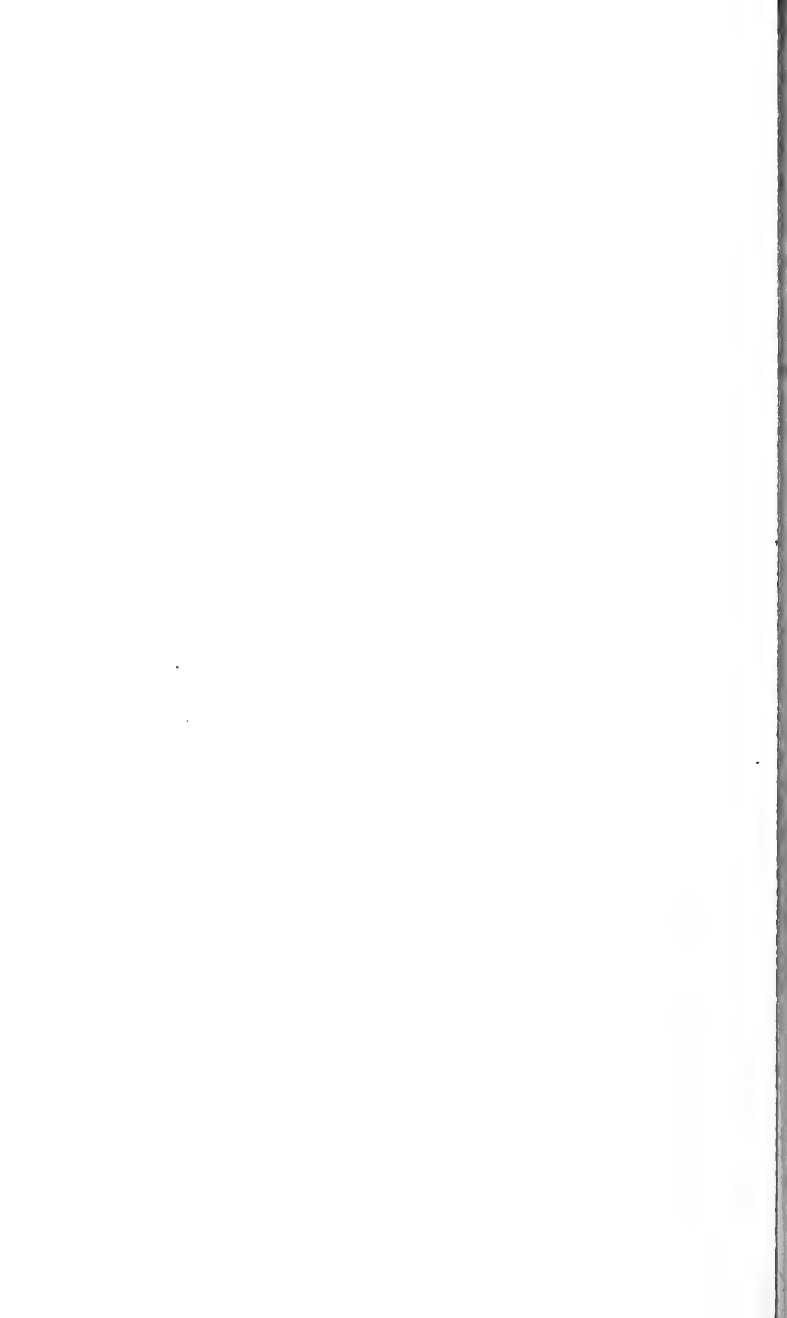
Vomerine teeth; digital disks divided on their upper surface by a groove 7. *Elosia*, p. 193.

Firmisternia.

Genyophrynia.

Genyophryne thomsonii, Blev.

a. Bad state. Sudest I², off S. E. New
Guinea. B. Thomson. (type).



Vomerine teeth none ; digital disks divided on their upper surface by a groove 8. *Phyllobates*, p. 194.

Vomerine teeth ; digital disks not grooved.

9. *Hylodes*, p. 198.

2. Tips of fingers and toes not dilated.

Pupil horizontal ; vomerine teeth ; tongue subcircular.

17. *Borborocœtes*, p. 252.

Pupil horizontal ; vomerine teeth in a transverse series behind the choanæ ; tongue entirely adherent.

18. *Zachænus*, p. 257.

Pupil erect ; vomerine teeth in a transverse series behind the choanæ ; tongue subcircular 19. *Limnodynastes*, p. 258.

Pupil horizontal ; vomerine teeth ; tongue suboval ; diapophyses of sacral vertebra slightly dilated .. 20. *Cryptotis*, p. 262.

Pupil horizontal ; vomerine teeth very slightly developed or absent ; tongue elliptic ; diapophyses of sacral vertebra slightly dilated.

21. *Crinia*, p. 263.

Pupil erect ; vomerine teeth none ; tongue elliptic ; diapophyses of sacral vertebra slightly dilated .. 22. *Hyperolius*, p. 267.

C. Sternum with a bony style.

Pupil horizontal ; tongue nicked behind ; tympanum very distinct ; diapophyses of sacral vertebra slightly dilated.

11. *Edalorhina*, p. 227.

Pupil horizontal ; tympanum indistinct or hidden ; vomerine teeth, if present, between the choanæ.. 12. *Paludicola*, p. 229.

Pupil horizontal ; vomerine teeth behind the choanæ.

13. *Leptodactylus*, p. 237.

Tips of toes dilated into regular disks.

14. *Plectromantis*, p. 249.

Pupil erect ; tongue slightly nicked. 15. *Limnomedusa*, p. 250.

Pupil erect ; tongue entire ; toes very long ; sternal style broad.

16. *Hylorhina*, p. 251.

1. PSEUDIS.

Pseudis, (*Laur.*) *Wagl. Syst. Amph.* p. 203 ; *Tschudi, Batr.* p. 80 ; *Dum. & Bibr.* viii. p. 327 ; *Günth. Cat.* p. 5 ; *Cope, Nat. Hist. Rev.* 1865, p. 111, and *Journ. Ac. Philad.* (2) vi. 1866, p. 93.

Lysapsus, *Cope, Proc. Ac. Philad.* 1862, pp. 155 & 351, and *Journ. Ac. Philad.* (2) vi. 1866, p. 93.

Batrachichthys, *Pizarro, Arch. Mus. Nac. Rio Janeiro*, i. p. 31.

Pupil horizontal. Tongue circular, entire and slightly free behind. Vomerine teeth. Tympanum distinct. Fingers free, first opposite to the others; toes webbed to the tips; tips of fingers and toes pointed, or swollen into small disks. Outer metatarsals separated by web. Omosternum cartilaginous; sternum a cartilaginous plate. Terminal phalanges simple.

S. America.

Synopsis of the Species.

I. Tips of fingers and toes pointed.

- Tibio-tarsal articulation reaching the tip
of the snout 1. *paradoxa*, p. 186.
Tibio-tarsal articulation reaching a good
deal beyond the tip of the snout 2. *minuta*, p. 187.

II. Tips of fingers and toes swollen into small disks.

- Tympanum half the size of the eye 3. *limellum*, p. 187.
Tympanum nearly as large as the eye .. 4. *mantidactyla*, p. 187.

1. *Pseudis paradoxa*.

Pseudis paradoxa, Günth. Cat. p. 5.

Merian, Ins. Sur. t. 71; *Linn. Mus. Ad. Frid.* p. 49; *Edwards, Phil. Trans.* li. p. 653, f. 15, *a, b*; *Seba*, i. 78, 15-21.

Rana paradoxa, *Linn. Syst. Nat.*; *Shaw, Zool.* iii. p. 120, pl. 36; *Daud. Rein.* p. 67, pls. 22 & 23, and *Rept.* viii. p. 130; *Merr. Tent.* p. 176; *Cuv. R. A.*; *Gravenh. Delic.* p. 34; *Griff. An. Kingd.* ix. p. 393.

Proteus raninus, *Laur. Syn. Rept.* p. 36.

Pseudis paradoxa, *Wagl. Syst. Amph.* p. 203; *Tschudi, Batr.* p. 80.

— *merianæ*, *Dum. & Bibr.* p. 330, pl. 86, f. 2.

Vomerine teeth in two straight series between the choanæ. Snout tapering, subacuminate; interorbital space broader than the upper eyelid; tympanum three fourths the width of the eye. Fingers pointed; toes pointed, webbed to the tips, fourth little longer than third; subarticular tubercles very small; inner metatarsal tubercle conical; no outer tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the tip of the snout. Skin smooth. Brownish above, indistinctly spotted with darker; hinder side of thighs brown-and-white marbled; under surface of thighs generally longitudinally striped with brown.

Guianas.

<i>a.</i> ♀.	Demerara.	Capt. Sabine [P.].
<i>b, c, d, e, f, g, h.</i> Larvæ.	Demerara.	
<i>i.</i> Larva.	Surinam.	Sir A. Smith [P.].
<i>k.</i> Larva.	Surinam.	
<i>l-m, n, o-q.</i> ♀ & larvæ.	S. America.	

v. Larva. Brazil. Christiania Mus.
Many spec. Asuncion, Paraguay. Bohls.
ix. Larva " " "

b-d. ♂♀. Colón. Resistencia. Spegazzini.
 e. ♀ Santa Cruz, Matto Grosso. Moore
 f. ♀ Corumba, " "
 g-h. ♂♀ Asunción, Paraguay. Böhl.

a. ♂ Montevideo Paris Mus.
 b. ♀ Rio Grande do Sul. Ihering.
 c-d. ♂ S. Rio de la Plata. Gairdner
 e, f. ♂♀ Rio Grande do Sul. Ihering.
 g-m, Larvæ 1899 " "
 n-o. ♂♀ Lagoa, Sta. J. do Mar. Michaelis.
 p-s. Larvæ. Rio Grande do Sul. Ihering.
 t. ♀ 44 Mercedes, Uruguay. Apfel.

2. *Pseudis minuta*. (PLATE XIV. fig. 1.)*Pseudis minuta*, *Günth. Cat.* p. 6.*Pseudis minuta*, *Peters, Mon. Berl. Ac.* 1863, p. 76; *Garman, Amer. Natur.* ii. 1877, p. 587, f. 97.

Differs from *P. paradoxa* by its much smaller size, its longer hind limbs, the tibio-tarsal articulation reaching a good deal beyond the tip of the snout. Snout rounded. An oblique white streak from the back edge of eye to the angle of mouth; a white stripe from the shoulder to the hypochondrium. Male with a subgular vocal sac.

Brazil.

a. ♂.

S. America.

C. Darwin, Esq. [P.]. (Type.)

3. *Pseudis limellum*.*Lysapsus limellum*, *Cope, Proc. Ac. Philad.* 1862, p. 155; *Steindachn. Novara, Amph.* p. 50.*Pseudis minuta*, *Steindachn. Verh. zool.-bot. Ges. Wien*, 1864, p. 262, pl. 11. f. 2-4.

Vomerine teeth in two fasciculi behind the choanæ. Snout sub-acuminate, without canthus rostralis; interorbital space as broad as the upper eyelid; tympanum half the size of the eye. Toes entirely webbed; tips of fingers and toes dilated into very small disks; a small acute metatarsal tubercle. Hind limb very long; carried forwards along the body, the knee reaches nearly the tympanum, and the tibio-tarsal articulation far beyond the tip of the snout. Upper surfaces shagreened. Above reddish brown; hind limbs cross-barred. Very small.

Paraguay; Brazil.

a. ♀.

Brazil.

4. *Pseudis mantidactyla*.*Lysapsus mantidactyla*, *Cope, Proc. Ac. Philad.* 1862, p. 352.

Tympanum nearly as large as the eye. Tips of toes very slightly dilated; inner metatarsal tubercle acute. Skin of back smooth, pustulous, most so posteriorly; skin of tibia and foot minutely roughened; several rows of acute rugosities on the former; beneath entirely smooth. Above uniform light brown; a yellowish band from axilla to femur; another above it on the lumbar region; femora cross-banded with brown above, and with three longitudinal brown bands on their posterior face. Male with two vocal vesicles.

Buenos Ayres. *S. Brazil.*

2. CENTROLENE.

Centrolene, *Espada, An. Soc. Esp.* i. 1872, p. 87.

Pupil horizontal? Tongue heart-shaped, free behind. Vomerine

teeth. Ear perfectly developed; tympanum distinct. Fingers and toes webbed, the tips dilated into large disks. Outer metatarsals separated? No omosternum; sternum a narrow cartilaginous plate. Terminal phalanges bifurcate.

Ecuador.

1. *Centrolene geckoideum*.

Centrolene geckoideum, *Espada*, l. c. p. 88, and *Viaj. Pacif., Vertebr.* pl. 2. f. 5.

Vomerine teeth in two oblique groups between the choanæ. Fingers half webbed, the membrane extending as a fringe to the disks; toes entirely webbed. Humerus with a strong spine. Skin of upper surfaces granular and tubercular. Greyish above; hands and feet darker.

Rio Napo, Ecuador.

3. MIXOPHYES.

Mixophyes, *Günth. Proc. Zool. Soc.* 1864, p. 46; *Cope, Nat. Hist. Rev.* 1865, p. 111, and *Journ. Ac. Philad.* (2) vi. 1866, p. 93.

Pupil vertical. Tongue circular, entire, free behind. Vomerine teeth. Tympanum distinct. Fingers free; toes webbed, the tips not dilated. Outer metatarsals separated by web. Omosternum cartilaginous; sternum a cartilaginous plate. Terminal phalanges simple.

Australia.

1. *Mixophyes fasciolatus*.

Mixophyes fasciolatus, *Günth. Proc. Zool. Soc.* 1864, p. 46, pl. 7. f. 1, and *Ann. & Mag. N. II.* (3) xiv. p. 311; *Steindachn. Novara, Amph.* p. 10; *Keferst. Arch. f. Naturg.* 1868, p. 255, pl. 5. f. 6.

Vomerine teeth in two straight series between the choanæ. Head large; snout rounded; interorbital space as broad as the upper eyelid; tympanum three fourths the width of the eye. Fingers and toes slightly swollen at the tips; first finger slightly longer than second; toes two-thirds webbed; subarticular tubercles well developed; inner metatarsal tubercle elongate, oval, compressed; no outer tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the tip of the snout. Skin smooth; a slight fold above the tympanum. Brownish olive above, indistinctly marbled with darker; a dark cross band between the eyes; a black band from the tip of the snout through the eye to behind the tympanum; limbs with narrow black cross bars. Male with a subgular vocal sac.

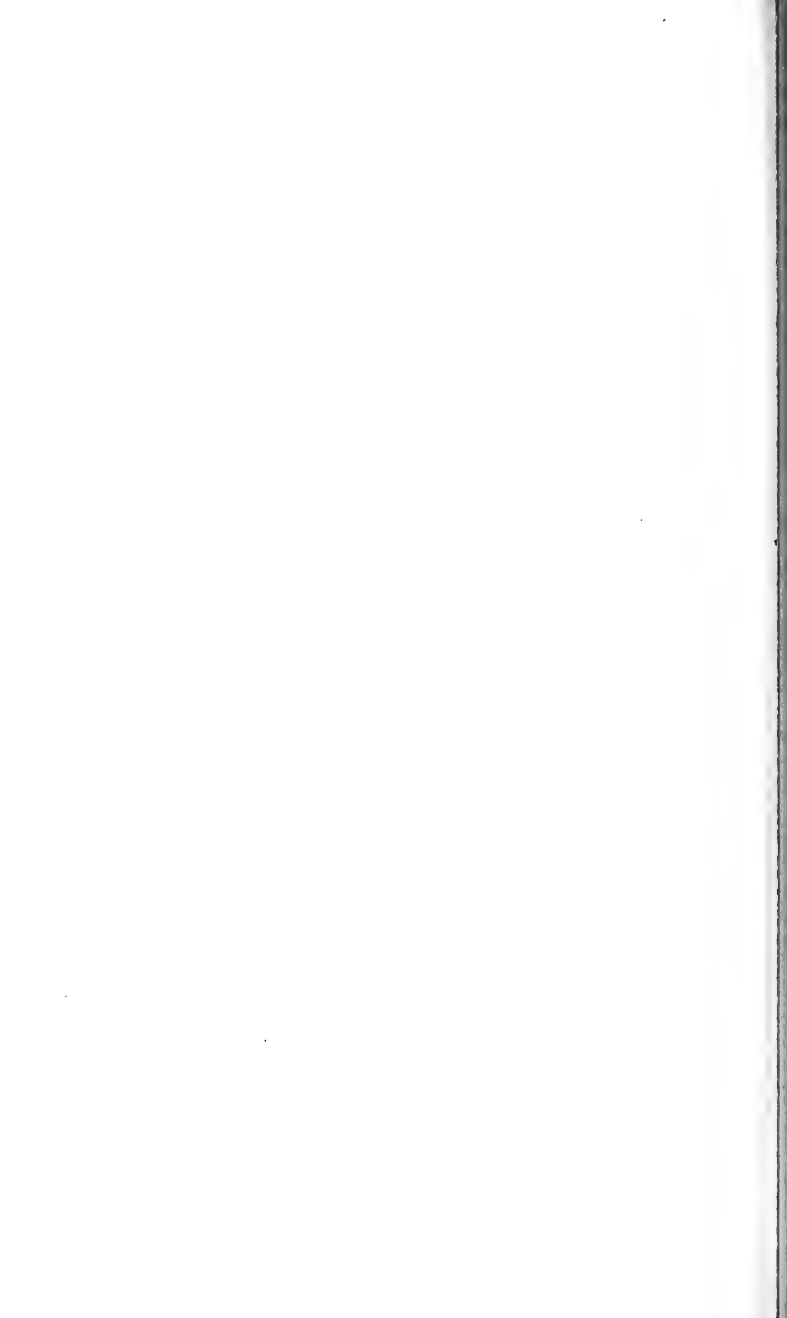
E. Australia.

a, b. ♂ ♀.

Clarence River.

G. Krefft, Esq. [P.]. (Types.)

2-d. ♀ egg. Mt. Wilson, Blue Mts, 3400 ft. Fletcher
e. ♂ Springwood. " " , 1500 ft. "



4. CYCLORHAMPHUS.

Cyclorhamphus, *Tschudi*, *Batr.* p. 81.

Cyclorhamphus, sp., *Dum. & Bibr.* viii. p. 452.

Pithecopis, (*Bibr.*) *Günth. Cat.* p. 22; *Cope, Nat. Hist. Rev.* 1865, p. 112, and *Journ. Ac. Philad.* (2) vi. 1866, p. 93.

Pupil horizontal? Tongue oval, entire and free behind. Vomerine teeth. Tympanum hidden. Fingers free; toes webbed, the tips not dilated. Outer metatarsals separated. Omosternum cartilaginous; sternum a cartilaginous plate. Terminal phalanges simple.

Brazil.

1. *Cyclorhamphus fuliginosus*.

Pithecopis fuliginosus, *Günth. Cat.* p. 22.

Cyclorhamphus fuliginosus, (*Bibr.*) *Tschudi, Batr.* p. 81; *Dum. & Bibr.* p. 454.

Vomerine teeth in two oblique series behind the choanæ. Toes two-thirds webbed; a single small metatarsal tubercle. Skin quite smooth; a large, flat, circular gland on each side. Uniform brownish; beneath finely whitish-spotted.

Brazil.

5. CALYPTOCEPHALUS.

Peltocephalus, *Tschudi, Batr.* p. 81.

Calyptocephalus, (*Bibr.*) *Dum. & Bibr.* viii. p. 447; *Günth. Cat.* p. 21; *Cope, Nat. Hist. Rev.* 1865, p. 112, and *Journ. Ac. Philad.* (2) vi. 1866, p. 93.

Pupil horizontal. Tongue circular, entire, free behind. Vomerine teeth. Cephalic derm involved in a rugose cranial ossification, the orbit being completely enclosed. Tympanum distinct. Fingers free; toes webbed, the tips not dilated. Outer metatarsals incompletely separated. Omosternum cartilaginous; sternum a cartilaginous plate. Terminal phalanges simple.

Chili; Panama.

1. *Calyptocephalus gayi*.

Calyptocephalus gayi, *Günth. Cat.* p. 21.

Peltocephalus quoyii, *Tschudi, Batr.* p. 81.

Calyptocephalus gayi, *Dum. & Bibr.* p. 450; *Guichen. in Gay, Chile*, ix. p. 109, pl. 6; *Steindachn. Novara, Amph.* p. 15; *Espada, Viaj. Pacif., Vert.* p. 2.

Vomerine teeth in two nearly straight series between the choanæ. Head depressed; snout very short, rounded; eyes small, interorbital space much broader than the upper eyelid; tympanum nearly as large as the eye. First finger shorter than second; toes nearly entirely webbed; subarticular tubercles none; inner metatarsal tubercle oval, blunt; no outer tubercle. The hind limb being

carried forwards along the body, the tibio-tarsal articulation reaches the shoulder or the tympanum. Skin of the back with round and oval warts. Dark olive above, indistinctly maculated with blackish. Male with two external subgular vocal sacs.

Chili.

a-c, d-e. ♂ ♀.

Chili.

f. Skeleton.

Chili.

2. *Calyptocephalus testudiniceps*.

Phrynocerus testudiniceps, Cope, *Proc. Ac. Philad.* 1862, p. 157.

Calyptocephalus testudiniceps, Cope, *Nat. Hist. Rev.* 1865, p. 112.

Vomerine teeth in separate transverse series anterior to the inner margin of the choanæ. Space between the orbits slightly concave, wider than the diameter of the orbit; tympanum vertically oval, longest diameter equal to the length of the third phalanx of the third finger. Toes fully webbed, except the extent of the last two phalanges of the median. Skin with obtuse warts. Above bright yellowish and brownish green, marbled with black; subanal region blackish, spotted with yellow.

Panama.

6. *TELMATOBIUS**.

Telmatobius, *Wieg. Nov. Act.* 1835, p. 262; *Günth. Cat.* p. 42.

Cycloramphus, sp., *Dum. & Bibr.* viii. p. 455.

Cyclorhamphus, *Günth. Cat.* p. 21; Cope, *Nat. Hist. Rev.* 1865, p. 112, and *Journ. Ac. Philad.* (2) vi. 1866, p. 96.

Pupil horizontal. Tongue subcircular, entire and free behind. Vomerine teeth present or absent. Tympanum hidden or absent. Fingers free; toes webbed, the tips not dilated. Outer metatarsals united. Omosternum cartilaginous; sternum a cartilaginous plate. Terminal phalanges simple.

W. S. America.

Synopsis of the Species.

I. No tympanic disk.

Vomerine teeth none 1. *peruvianus*, p. 191.

Vomerine teeth; labial integument largely free, and overhanging the lower jaw . . 2. *amaricus*, p. 191.

II. A tympanic disk.

Toes nearly entirely webbed; first finger extending beyond second 3. *jelskii*, p. 191.

Toes half webbed; tibio-tarsal articulation not reaching the eye 4. *marmoratus*, p. 192.

* *Telmatobius brasiliensis*, Steindachn. Verh. zool.-bot. Ges. Wien, 1864, p. 282, pl. 16. f. 3.—Brazil, probably Rio Janeiro.

g-i. ♂ Chili. Gov't of Chili.

Toes half webbed; tibio-tarsal articulation

reaching in front of the eye 5. *pustulosus*, p. 192.

Toes shortly webbed; no metatarsal tubercle 6. *angustipes*, p. 192.

1. *Telmatobius peruvianus*.

Telmatobius peruvianus, *Günth. Cat.* p. 42.

Telmatobius peruvianus, *Wiegman. Nov. Act.* 1835, p. 262, pl. 22. f. 2;

Peters, Mon. Berl. Ac. 1873, p. 413, pl. 2. f. 3.

Vomerine teeth none. Snout short, rounded; no tympanic disk. Toes incompletely webbed. Above with many very small horny warts. Above brown, with a darker longitudinal band, anteriorly crossed by two transverse streaks. Male without vocal sac, with blackish rugosities on the inner side of the first finger.

Peru.

2. *Telmatobius æmaricus*.

Cyclorhamphus æmaricus, *Cope, Proc. Ac. Philad.* 1874, p. 125, and
Proc. Amer. Philos. Soc. xvii. 1877, p. 39.

Vomerine fasciculi minute, between the small choanæ. No tympanic disk. Toes half webbed; a free border on the inner side of the tarsus and outer side of outer toe. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches about the angle of the mouth. Skin smooth, except a few small tubercles on the occipital region; labial integument largely free and overhanging the lower jaw. Colour olive-brown above, lighter brown below; sometimes a few scattered yellow spots above. Male with numerous small horny points on the breast, and a large rugose plate on each thumb.

Peru.

3. *Telmatobius jelskii*.

Pseudobatrachus jelskii, *Peters, Mon. Berl. Ac.* 1873, p. 415.

? *Cyclorhamphus culeus*, *Garman, Bull. Mus. Comp. Zool.* iii. p. 276,
pl. 1.

Vomerine teeth in two small groups between the choanæ; the latter relatively smaller than in *T. marmoratus*. Snout short, rounded; interorbital space broader than the upper eyelid. Tympanum small, hidden. Fingers blunt, first extending beyond second; toes blunt, nearly entirely webbed; subarticular tubercles small, a small oval inner, and a flat rounded outer metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the eye, or nearly so far. Skin smooth, glandular and distinctly porous above. Upper surfaces blackish olive; lower surfaces yellowish, marbled with brown. Male without vocal sac; during the breeding-season the inner side of the first finger is covered with blackish rugosities.

Peru; Ecuador.

u-e. ♂ ♀.
f. ♀.
g-h. ♂ ♀.

W. Ecuador.
 Cuenca.
 Intac, Ecuador.

Mr. Fraser [C].
 Mr. Fraser [C].
 Mr. Buckley [C].

4. *Telmatobius marmoratus*.

Cyclorhamphus marmoratus, *Günth. Cat.* p. 21.

Cyclorhamphus marmoratus, *Dum. & Bibr.* p. 455.

Vomerine teeth in two small groups between the choanæ, which are large. Snout short, rounded; interorbital space as broad as the upper eyelid; tympanum small, hidden. Fingers pointed, first not extending beyond second; toes pointed, half webbed; sub-articular tubercles small; a small, oval, inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation does not reach the eye. Skin smooth; a flat parotoid gland, frequently indistinct. Brownish, marbled with black, often with small white spots. Male without vocal sac.

Chili; Peru.

a, b. Many sp.: ♂, ♀, and larvæ Guascona. J. B. Pentland, Esq. [P].
 (bad state).
c. ♀. Chili.

5. *Telmatobius pustulosus*.

Cyclorhamphus pustulosus, *Cope, Proc. Amer. Philos. Soc.* xvii. 1877, p. 39.

Vomerine patches very small. Tongue wider than long. Head large, flat; snout oblique; nostrils equally distant from the eye and the labial border; tympanum a vertical oval, whose long diameter is less than half that of the eye-slit, hidden. Fingers and toes elongate, the latter half webbed. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches in front of the eye. Skin smooth, except on the sides between the ilia round the vent, the superior face of the tibia, and the sole of the foot, where it is tubercular; limbs with small acute warts. Dark lead-colour everywhere, excepting the gular region and the tips of the lateral warts, which are dirty white; upper regions indefinitely shaded with brown and grey.

Tinta, Peru (11,400 feet).

6. *Telmatobius angustipes*.

Cyclorhamphus angustipes, *Cope, Proc. Amer. Philos. Soc.* xvii. 1877, p. 38.

Vomerine teeth in two small fascicles close together, filling the narrow space between the inner nostrils. Snout short and rounded; nostril nearer the eye than the tip of the snout; tympanum vertically oval, one third the vertical diameter of the eye, hidden. First and second fingers equal; foot narrow; web between the toes

short; no cuneiform tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the nostril. Skin perfectly smooth. Above dark plumbeous; below, a light lead-colour.

Juliaca, Peru (12,500 feet).

7. ELOSIA.

Elosia, *Tschudi*, *Batr.* p. 77; *Dum. & Bibr.* viii. p. 632; *Günth. Cat.* p. 84; *Cope, Nat. Hist. Rev.* 1865, p. 111.

Enhydrobius, sp., *Wagl. Syst. Amph.* p. 202.

Enhydrobius, *Cope, Journ. Ac. Philad.* (2) vi. 1866, p. 96.

Hylodes, sp., *Steindachn. Verh. zool.-bot. Ges. Wien*, 1864, p. 248.

Pupil horizontal. Tongue subcircular, free behind. Vomerine teeth. Tympanum distinct. Fingers free; toes nearly free, the tips dilated into regular disks, the upper surface of which bears two rounded cutaneous divisions. Outer metatarsals united. Omosternum cartilaginous; sternum a cartilaginous plate. Terminal phalanges T-shaped.

Brazil.

Synopsis of the Species.

- Vomerine teeth on a level with the hinder edge of the choanæ; tarso-metatarsal articulation reaching beyond the tip of the snout 1. *nasus*, p. 193.
 Tarso-metatarsal articulation not reaching beyond the tip of the snout 2. *bufonia*, p. 194.
 Vomerine teeth on a level with the front edge of the choanæ 3. *vomerina*, p. 194.

1. *Elosia nasus*.

Elosia nasus, *Günth. Cat.* p. 84.

Hyla nasus, *Lichtenst. Verz. Doubl.* p. 106.

— *ranoides*, *Spix, Spec. Nov. Test. Ran. Bras.* p. 32, pl. 6. f. 3:

Peters, Mon. Berl. Ac. 1872, p. 207.

Enhydrobius ranoides, part., *Wagl. Syst. Amph.* p. 202.

Elosia nasuta, *Tschudi, Batr.* p. 77; *Dum. & Bibr.* p. 633; *Girard, U.S. Expl. Exped., Herp.* p. 65, pl. 4. f. 39-43.

Enhydrobius nasus, *Cope, Journ. Ac. Philad.* (2) vi. 1866, p. 96.

Hylodes truncatus, *Steindachn. Verh. zool.-bot. Ges. Wien*, 1864, p. 248, pl. 17. f. 3.

Tongue subcircular, entire. Vomerine teeth in two short oblique series commencing on a level with the hinder edge of the choanæ. Snout rounded, obliquely truncate, with angular canthus rostralis; nostril equally distant from the eye and the tip of the snout; inter-orbital space as broad as the upper eyelid; tympanum half the diameter of the eye. Fingers rather slender, first a little shorter than second; toes rather slender, with a slight web at the base which extends as a fringe along their sides; disks rather small;

subarticular tubercles small; two small metatarsal tubercles. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches in front of the eye. Skin smooth, slightly tubercular on the sides. Brown above, spotted with darker; hinder side of thighs marbled; limbs cross-barred; lower surfaces dirty white, the belly marbled with greyish.

Brazil.

a. ♀.

S. America.

2. *Elosia bufonia*.

Elosia bufonium, Girard, *Proc. Ac. Philad.* vi. 1853, p. 423, and *U.S. Expl. Exped. Herp.* p. 66, pl. 4. f. 23-27.

Differs from *E. nasus* chiefly in the shorter hind limbs, the tarso-metatarsal articulation not extending beyond the tip of the snout.

Rio Janeiro.

3. *Elosia vomerina*.

Elosia vomerina, Girard, *Proc. Ac. Philad.* vi. 1853, p. 423, and *U.S. Expl. Exped. Herp.* p. 69, pl. 4. f. 17-22.

Tongue subcircular, discoid, broadly emarginated posteriorly. Vomerine teeth in a transverse and rectilinear series immediately in advance of the anterior margin of the choanæ. Nostril a little nearer the tip of the snout than the eye. Tympanum proportionally larger than in the two preceding species. Inner metatarsal tubercle resembling a rudimentary toe. If the hind limb is carried forwards along the body, the middle of the tarsus reaches the tip of the snout. Skin perfectly smooth.

Rio Janeiro.

Syrhopus Cope.
S. (PHYLLOBATES*. See p. 138)

Phyllobates, Dum. & Bibr. viii. p. 637; Günth. *Cat.* p. 90; Cope, *Nat. Hist. Rev.* 1865, p. 112, and *Journ. Ac. Philad.* (2) vi. 1866, p. 96.

* 1. *Phyllobates glandulosus*, (Fitz.) Steindachn. Novara, *Amph.* p. 53, pl. 3. f. 1-4.—Brazil.

2. *Phyllobates peruensis*, Steindachn. l. c. p. 53, pl. 4. f. 8-11.—Peru. (Perhaps a *Hylodes*.)

3. *Phyllobates elegans*.—Dr. Günther has mentioned (*Proc. Zool. Soc.* 1868, p. 479), but not described, under this name a *Phyllobates* of which but one specimen—from Bogota—is in the collection. He thought this species might be the same as *Liuperus elegans*, Peters, *Mon. Berl. Ac.* 1863, p. 447; but from the original description of Prof. Peters, and from a subsequent note (ed. loc. 1869, p. 879), I am convinced that the specimen in the British Museum is altogether different from *Liuperus elegans*, which probably belongs to the genus *Paludicola*, as defined in the present Catalogue. I have not been able to refer this *Phyllobates* to any of the species described. But I think it more prudent to put it aside than establish a species upon insufficient material in a genus of which I have no direct knowledge.

f. ♀
d, e ♂

Sta Catharina.
Theresopolis

Michaelis.
Jöldi

b. ♀

Theresopolis

Jöldi

Phyllobates trilineatus, Blgr.

Yarimaguas. Hahn. (Lepus)

Pupil horizontal. Tongue elliptic or subcordiform, free behind. Vomerine teeth none. Tympanum distinct. Fingers and toes dilated into regular disks, the upper surface of which bears two rounded cutaneous divisions. Outer metatarsals united. Omosternum cartilaginous; sternum a cartilaginous plate. Terminal phalanges **T**-shaped.

Tropical America.

Synopsis of the Species.

I. Belly perfectly smooth.

- Tympanum three fourths the diameter of the eye; snout rounded 1. *bicolor*, p. 195.
 Tympanum two thirds the size of the orbit; snout rather acute; a delicate fold on the median line of the back . 2. *limbatus*, p. 195.
 Tympanum one half the diameter of the orbit; snout rather elongate, narrowed 3. *cystignathoides*, p. 196.
 Tympanum one half the diameter of the eye; snout broad 4. *melanorhinus*, p. 196.
 Tympanum one sixth of orbit; snout depressed 5. *hyleformis*, p. 196.

II. Belly granulate.

- Tympanum a little more than one fourth the diameter of the eye; skin covered with small tubercles 6. *chalcus*, p. 197.
 Tympanum two thirds the diameter of the eye; upper surfaces with small warts 7. *verruculatus*, p. 197.
 Tympanum one eighth of orbit; snout projecting 8. *ridens*, p. 197.

1. *Phyllobates bicolor*.

Phyllobates bicolor, *Günth. Cat.* p. 90.

Phyllobates bicolor, *Bibron*, in *Ramon de la Sagra, Hist. Cuba, Rept.* pl. 29 bis; *Dum. & Bibr.* p. 638.

Snout rounded, with rounded canthus rostralis; nostril near the tip of the snout; tympanum distinct, three fourths the diameter of the eye. Skin perfectly smooth everywhere; angle of the mouth glandular. An indistinct outer metatarsal tubercle. Whitish fulvous above; dark brown or blackish beneath.

Cuba.

2. *Phyllobates limbatus*.

Phyllobates limbatus, *Cope, Proc. Ac. Philad.* 1862, p. 154.

Snout rather acute; nostril nearer the tip of the snout than the eye; tympanum two thirds the size of the orbit. The hind limb

being carried forwards along the body, the tibio-tarsal articulation reaches hardly the eye. Skin smooth below, slightly granular upon the lateral, gluteal, and occipital regions; a delicate dermal fold on the median line of the back; palms and soles granular; outer metatarsal tubercle very small. Above chestnut; a white line extends from the end of the snout to the knee-joint; beneath this a broad black band extends to the same position; upper surfaces of hind limbs and anal region blackish brown; inferior surface of hind limbs and sides of belly spotted with brown; upper lip yellow. Very small.

Eastern Cuba.

3. *Phyllobates cystignathoides*.

Phyllobates cystignathoides, Cope, *Proc. Amer. Philos. Soc.* xvii. 1877, p. 89.

Habit of *Hylodes rhodopsis*. Snout rather clongate, narrowed, rounded, not projecting much beyond the lip; nostril nearer the tip of the snout than the eye; tympanum very distinct, half the diameter of the orbit. Disks of fingers and toes moderate; sub-articular tubercles prominent; two metatarsal tubercles. The hind limb being carried forwards along the body, the tibio-tarsal articulation marks the middle of the eye. Skin entirely smooth. Reddish brown above, leather-brown beneath; back thickly spotted with large blackish spots; sides marbled with lighter and darker; upper lip with a few pale spots; limbs obscurely cross-banded.

Cordova, Vera Cruz.

4. *Phyllobates melanorhinus*.

Phyllobates melanorhinus, Günth. *Cat.* p. 91.

Phyllobates melanorhinus, Berthold, *Götting. Nachr.* 1845, p. 43, and *Abhandl. Ges. Wiss. Götting.* iii. 1846, p. 14, pl. 1. f. 7; *Keferst. Götting. Nachr.* 1867, p. 354.

Snout broad, rounded, with angular canthus rostralis; tympanum distinct, half the diameter of the eye. First finger longer than second; disks of fingers and toes small. Skin everywhere smooth. Uniform greyish yellow above, blackish beneath; snout blackish; limbs variegated with blackish or grey. Male with a vocal sac.

Colombia.

5. *Phyllobates hylæformis*.

Phyllobates hylæformis, Cope, *Journ. Ac. Philad.* (n. s.) viii. 1876, p. 107, pl. 23. f. 8.

Habit of a *Hyla*. Snout rounded, depressed, not produced; canthus rostralis obtuse; loreal region oblique; interorbital space wide; tympanum one sixth of orbit. Disks of fingers and toes rather large. Skin smooth above and below. Colour above rich brown, divided on the vertebral line by a narrow red stripe; thighs light brown



before and behind; abdomen and inferior surfaces of thighs and legs with a rosy or orange pigment. Male with a large rose-coloured vocal sac.

Pico Blanco, Costa Rica.

6. *Phyllobates chalceus*.

Phyllobates chalceus, *Peters, Mon. Berl. Ac.* 1873, p. 609.

Snout broad, hardly as long as the diameter of the eye; loreal region ascending gradually; canthus rostralis rounded; tympanum a little more than one fourth the diameter of the eye. First finger longer than second; no metacarpal nor metatarsal tubercles. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the eye or the tip of the snout. Skin covered with small tubercles, smaller on the belly than on the back. Brownish yellow above, yellowish beneath.

Pastassa Valley, Colombia.

7. *Phyllobates verruculatus*.

Phyllobates verruculatus, *Peters, Mon. Berl. Ac.* 1870, p. 650.

Snout a little longer than the diameter of the eye, with rounded canthus rostralis and vertical loreal region; tympanum very distinct, two thirds the diameter of the eye. First finger shorter than second; disks of fingers moderate, of toes small; subarticular tubercles well developed; two small metatarsal tubercles. Upper surface of body with small warts; throat and breast smooth; lower belly and inferior surface of thighs granular. Yellowish brown above, spotted and dotted with black; loreal and temporal regions blackish brown; brownish yellow beneath, variegated with dark.

Huanusco, Mexico.

8. *Phyllobates ridens*.

Phyllobates ridens, *Cope, Proc. Ac. Philad.* 1866, p. 131.

Tongue broad, truncate. Snout projecting beyond jaw; canthus rostralis strong; loreal region oblique; tympanum one eighth of orbit. Fingers and toes long, with well-marked disks. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the tip of the snout. Lower surfaces closely arcuate. Colour above greyish brick-red, with a grey cross bar between the eyes, and others across the hind limbs; lip with grey bars; a grey line on the canthus rostralis, and a black spot on the tympanum: below pale brownish.

St.-Juan River, Nicaragua.

9. HYLODES*.

Hylodes, *Fitzing. Classif. Rept.* p. 38; *Tschudi, Batr.* p. 77; *Dum. & Bibr.* viii. p. 619; *Günth. Cat.* p. 91; *Cope, Nat. Hist. Rev.* 1865, p. 111, and *Journ. Ac. Philad.* (2) vi. 1866, p. 96.

Enydriobius, sp., *Wagl. Syst. Amph.* p. 202.

Batrachyla, *Bell, Zool. Beagle, Rept.* p. 43; *Cope, Journ. Ac. Philad.* (2) vi. p. 97.

Craugastor, *Cope, Proc. Ac. Philad.* 1862, p. 153.

Lithodytes, *Cope, l. c.*, and *Journ. Ac. Philad.* (2) vi. p. 96.

Euhyas, *Cope, l. c.*

Strabomantis, *Peters, Mon. Berl. Ac.* 1863, p. 405; *Cope, Journ. Ac. Philad.* (2) vi. p. 96.

Epirhexis, *Cope, l. c.*

Leiyla, *Keferst. Arch. f. Naturg.* 1868, p. 296.

Linnophys, *Espada, Jorn. Sc. Lisb.* iii. 1870, p. 60.

Pristimantis, *Espada, l. c.* p. 61.

Pupil horizontal. Tongue subcircular or oval, entire or slightly nicked, and free behind. Vomerine teeth. Tympanum generally distinct. Fingers free; toes free or slightly webbed, with dilated tips. Outer metatarsals united. Omosternum cartilaginous; sternum a cartilaginous plate. Terminal phalanges T-shaped.

Tropical America.

Synopsis of the Species.

I. Toes one-third webbed.

Belly nearly smooth 1. *palmatus*, p. 201.

II. Toes free, or nearly so.

A. Belly smooth.

1. Tympanum perfectly distinct.

a. Head moderately broad.

a. Vomerine teeth in two fasciculi or short oblique series.

* Tips of fingers and toes round disks.

† Tympanum as large as the eye.

Tibio-tarsal articulation reaching the tip

of the snout 5. *muricinus*, p. 203.

* 1. *Batrachyla longipes*, Baird, U.S. Mex. Bound. Surv., Herp. pl. xxxvii. f. 1-3.—*Epirhexis longipes*, Cope, Journ. Ac. Philad. (2) vi. p. 96.—Mexico.
 2. *Hylodes verrucosus*, Espada, Viaj. Pacif., Vert. pl. 3 bis. f. 1.
 3. *Hylodes philippi*, id. ibid. f. 2.
 4. *Hylodes diadematus*, id. ibid. f. 3.
 5. *Hylodes rubicundus*, id. ibid. f. 4.
 6. *Cyclocephalus lacrimosus*, id. ibid. f. 5.
 7. *Hylodes lineatus*, Brocchi (nec Schneid.), Bull. Soc. Philom. (7) iii. p. 22.—Mexico.



†† Tympanum one half or two thirds the diameter of the eye.

- | | |
|---|------------------------------------|
| Head nearly twice as long as the pelvis . | 2. <i>lanciformis</i> , p. 202. |
| Snout pointed, a little longer than the orbital diameter; disks of fingers and toes well developed | 3. <i>berkenbuschii</i> , p. 202. |
| Snout subacuminate, as long as the orbital diameter; tips of fingers and toes scarcely dilated | 4. <i>podiciferus</i> , p. 203. |
| Snout rather pointed, a little longer than the orbital diameter; disks of fingers and toes small; several fine linear glandular folds on the back | 6. <i>rhodopsis</i> , p. 203. |
| Snout subacuminate, longer than the orbital diameter; disks of fingers and toes well developed; no glandular lateral fold | 7. <i>conspicillatus</i> , p. 204. |
| Snout subacuminate, longer than the orbital diameter; a narrow glandular lateral fold | 8. <i>gollmeri</i> , p. 205. |
| Upper surfaces covered with granulation and glandular ridges, two of which form a)(on the back | 9. <i>rugosus</i> , p. 205. |

††† Tympanum not half the diameter of the eye.

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|--|-------------------------------|
| Vomerine teeth in two oblique series, far behind the choanæ; tongue emarginate | 10. <i>griseus</i> , p. 206. |
| Vomerine teeth in two small groups close to the hinder edge of the choanæ; tongue entire | 11. <i>bocourti</i> , p. 206. |

** Tips of fingers and toes truncate.

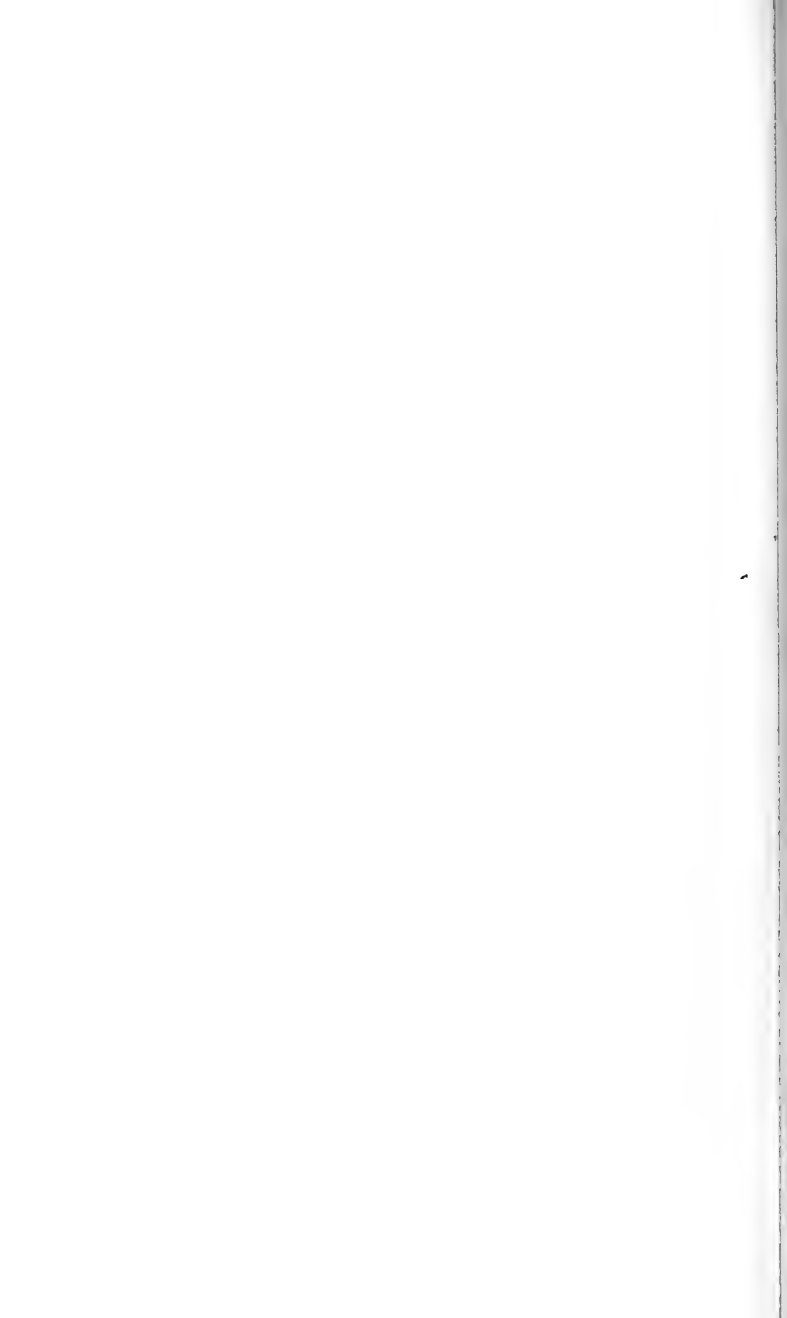
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|----------------------------|------------------------------|
| Snout short, rounded | 12. <i>augusti</i> , p. 206. |
|----------------------------|------------------------------|

β. Vomerine teeth in two long, straight or curved transverse series.

- | | |
|---|-------------------------------|
| Tympanum three fourths the diameter of the eye; upper surfaces tubercular. | 13. <i>lineatus</i> , p. 207. |
| Tympanum one half the diameter of the eye; tibio-tarsal articulation reaching the eye or a little beyond; hind limbs not cross-barred | 14. <i>lentus</i> , p. 207. |
| Tympanum one half the diameter of the eye; tibio-tarsal articulation reaching hardly the eye; hind limbs cross-barred | 15. <i>luteolus</i> , p. 208. |

- Tympanum one half the diameter of the eye; vomerine series not extending outwards beyond the external border of the choanæ; skin smooth 16. *planirostris*, p. 208.
- Tympanum one half the diameter of the eye; vomerine series not extending outwards beyond the external border of the choanæ; numerous glandular lines along the back 17. *binotatus*, p. 209.
- b. Head broader than the body.
- Vomerine teeth in two curved series . . 18. *cuneatus*, p. 209.
- Tympanum large; interorbital space plane, without ridges 19. *laticeps*, p. 210.
- Tympanum one fourth the size of the eye; interorbital space plane, without ridges 20. *melanostictus*, p. 210.
- Tympanum as large as the eye; interorbital space with crest-like lateral ridges; back with dermal folds . . . 21. *pelviculus*, p. 210.
- Tympanum one third the diameter of the eye; interorbital space with crest-like lateral ridges; back with dermal folds 22. *megacephalus*, p. 211.
- Tympanum one third the diameter of the eye; interorbital space with crest-like lateral ridges; back without dermal folds 23. *gulosus*, p. 211.
2. Tympanum indistinct; eustachian tubes minute.
- Tibio-tarsal articulation reaching beyond the tip of the snout 24. *diastema*, p. 212.
- B. Belly slightly granular.
- No tympanic disk; eustachian tubes minute 25. *surdus*, p. 212.
- Tympanum distinct, small; upper surfaces tubercular 26. *glandulosus*, p. 212.
- Tympanum distinct, small; fronto-parietals concave, with prominent ridges 27. *devillii*, p. 213.
- C. Belly granular.
1. Head moderate.
- a. Without serrated ridges.
- a. Vomerine teeth in a zigzag row across the palate.
- Disks moderate, transversely oval; head and body with granuliform warts . . . 28. *ricordii*, p. 213.
- Disks small; skin smooth above 29. *oxyrhynchus*, p. 213.





β. Vomerine teeth in two groups, or oblique series, behind, and not outwards beyond the choanæ.

- First toe as long as second 30. *auriculatus*, p. 214.
 Vomerine teeth in two small oblique series; tympanum scarcely half the diameter of the eye 31. *martinicensis*, p. 214.
 Head broader than the body 32. *varians*, p. 215.
 Canthus rostralis rounded; tympanum one third the diameter of the eye 33. *bogotensis*, p. 215.
 Tongue very large; tympanum one third the diameter of the eye 34. *bicumulus*, p. 215.
 Snout longer than the diameter of the eye; disks much developed, truncate . 36. *cruentus*, p. 216.
 Tympanum very small, one eighth the area of the eye; disks truncate 35. *cerasinus*, p. 216.
 A strong fold across the chest; habit of *Hyla arborea* 37. *unistrigatus*, p. 217.
 Fronto-parietals a little concave, their edges slightly prominent, their width almost twice that of the upper eyelid . 38. *buckleyi*, p. 217.
 Tympanum hidden 39. *whymperi*, p. 218.
 Tympanum slightly distinct; tibio-tarsal articulation marking the shoulder .. 40. *curtipes*, p. 218.

γ. Vomerine teeth between the choanæ.

- Fingers long; tips of fingers and toes truncate 41. *leptopus*, p. 219.

δ. Head with serrated ridges.

- Vomerine teeth in two oblique, slightly arched series 42. *galdii*, p. 219.

2. Head very large, with strong superciliary bony ridges.

- Tibio-tarsal articulation reaching the nostril 43. *sulcatus*, p. 220.
 Tibio-tarsal articulation not reaching the nostril 44. *biporcatus*, p. 220.
 Upper eyelid with a horn-like dermal appendage 45. *cornutus*, p. 220.

1. *Hylodes palmatus*.

Leiyla g ntherii, *Keferst. Arch. f. Naturg.* 1868, p. 296, pl. 9. f. 4 & 5.

Liyla rugulosa, *Cope, Proc. Amer. Philos. Soc.* 1869, p. 160.

Hylodes rugosus, *Brocchi, Miss. Sc. Mex., Batr.* p. 54.

Tongue oval, emarginate. Vomerine teeth in two approximated fasciculi behind the choan . Snout acuminate, with distinct canthus rostralis; nostril much nearer the tip of the snout than the

eye; tympanum distinct, half the size of the eye or more. Fingers moderate, first longer than second; toes long, one-third webbed; disks rather small; a single metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the tip of the snout, or beyond. Back, and especially the sides, tubercular; belly nearly smooth. Dark brown above; sometimes a pale vertebral line; below unspotted white, except gular region, which is brown.

Central America.

a-b. Hgr., bad state.

Dueñas.

O. Salvin, Esq. [C.].

Referred with some doubt to this species.

2. *Hylodes lanciformis*.

Lithodytes lanciformis, Cope, *Proc. Amer. Philos. Soc.* xvii. 1877, p. 88.

Vomerine teeth in two fasciculi which are truncate posteriorly, and are situated behind the posterior line of the choanæ. Head nearly twice as long as the pelvis; snout narrowed and convex at the extremity; canthus rostralis well defined; nostril nearly terminal; tympanum distinct, two thirds the diameter of the eye. Disks of fingers small, of toes of medium size. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the tip of the snout. Skin quite smooth. Colour above dark ashen, penetrated with pink; a dark interorbital cross band, in front of which the snout is very pale; a broad black band extends from the tip of the snout across the tympanum, where it contracts to a narrow black line which extends from the superior border of the tympanum to near the middle of the side; a narrow white vertebral line; hind limbs pink with dusky cross bands; below immaculate.

Central America.

3. *Hylodes berkenbuschii*.

Hylodes berkenbuschii, Peters, *Mon. Berl. Ac.* 1869, p. 879; Brocchi, *Miss. Sc. Mex.*, *Batr.* p. 52.

Tongue heart-shaped, slightly nicked behind. Vomerine teeth in two small oblique groups, close together, behind the choanæ. Snout pointed, a little longer than the orbital diameter, with distinct canthus rostralis; nostril much nearer the tip of the snout than the eye; tympanum distinct, two thirds the diameter of the eye. First finger a little shorter than second; toes with a rudimental web, extending as a narrow fringe to their tips; disks well developed; a dermal fold along the inner side of the tarsus; a single metatarsal tubercle. Skin smooth; sides with a few elongate warts; a strong glandular fold from the shoulder to the thigh. Brownish above, with darker spots; a triangular dark spot between the eyes. Limbs cross-barred; hinder side of thighs with small light and black spots.

C-d. ♀ & 1 yr. Tehuantepec. Brussels Mus.
e. ♀ Mexico. Fischer.
f-g. Ad. Tehuantepec. Sumichrast.

Throat brown, with light specks; belly light yellowish brown, with dark spots.

Mexico.


4. *Hylodes podiciferus*.

Lithodytes podiciferus, Cope, *Journ. Ac. Philad.* (n. s.) viii. 1876, p. 107, pl. 23. f. 9.

Hylodes podiciferus, Brocchi, *Miss. Sc. Mex., Batr.* p. 56.

Tongue oval, slightly nicked behind. Vomerine teeth in two small oblique series behind the choanæ. Snout subacuminate, as long as the orbital diameter; nostril much nearer the tip of the snout than the eye; interorbital space broader than the upper eyelid; tympanum distinct, two thirds the diameter of the eye. Tips of fingers and toes scarcely dilated. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches beyond the tip of the snout. Skin smooth. Four varieties of colour are distinguished by Cope. The present specimen is greyish, marbled with brown; sides of head and of front part of body, and a cross bar between the eyes, dark brown; a light vertebral line; hind limbs cross-barred.

C. America.

a. Young. Neighbourhood of Xazú. Messrs. Salvin and Godman [P.] 

5. *Hylodes muricinus*.

Lithodytes muricinus, Cope, *Journ. Ac. Philad.* (n. s.) viii. 1876, p. 108.

Hylodes muricinus, Brocchi, *Miss. Sc. Mex., Batr.* p. 56.

The shorter hind limbs (the tibio-tarsal articulation reaching the tip of the snout) and larger tympanum (the size of which equals that of the eye), with the more transverse and widely separated vomerine teeth, distinguish this form from *H. podiciferus*.

Pico Blanco, Costa Rica.

[*Lithodytes habenatus*, Cope, *l. c.* p. 109.

Hylodes habenatus, Brocchi, *l. c.*

Is probably not specifically different from *H. muricinus*.

Pico Blanco.]

6. *Hylodes rhodopsis*.

Lithodytes rhodopsis, Cope, *Proc. Ac. Philad.* 1866, p. 323, and *Proc. Amer. Philos. Soc.* xi. 1869, p. 160.

Hylodes sallæi, Günth. *Proc. Zool. Soc.* 1868, p. 487, pl. 38. f. 3.

— *rhodopsis*, Brocchi, *Miss. Sc. Mex., Batr.* p. 50.

Tongue heart-shaped, slightly nicked behind. Vomerine teeth in two small oblique groups behind the choanæ. Snout rather pointed, a little longer than the orbital diameter, with angular canthus rostralis; nostril much nearer the tip of the snout than the eye; interorbital space broader than the upper eyelid; tympanum distinct,

two thirds the diameter of the eye. Fingers moderate, first longer than second; toes quite free; disks small; subarticular tubercles well developed; two metatarsal tubercles. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the tip of the snout. Skin smooth, with several fine linear glandular folds—one from the eye above the tympanum to the shoulder, another from the eye to the centre of the back, and one or two on each side of the hinder part of the back. Brown above; a black stripe from the tip of the snout through the eye to the shoulder, sometimes a black spot in the centre of the back; anal region blackish; hind limbs indistinctly cross-barred.

Mexico.

<i>a.</i> Hgr.?	Mexico.	M. Sallé [C.]. (Type of <i>H. salléi</i> .)
<i>b.</i> Hgr.?	Vera Paz.	O. Salvin, Esq. [C.].

7. *Hylodes conspicillatus*. (PLATE XIV. fig. 2.)

Hylodes conspicillatus, Günth. Cat. p. 92.

Lithodytes conspicillatus, Cope, Proc. Ac. Philad. 1868, p. 115.

Tongue oval, slightly nicked behind. Vomerine teeth in two small groups behind the level of the choanæ. Snout subacuminate, with angular canthus rostralis; the orbital diameter equals the distance between the eye and the nostril, or two thirds of the distance between the former and the tip of the snout; interorbital space broader than the upper eyelid; tympanum half the diameter of the eye. Fingers moderate, first not extending beyond second; toes moderate, with a rudimentary web; disks and subarticular tubercles well developed; a small oval inner, and a rather indistinct rounded outer metatarsal tubercle. Hind limb very variable in length; carried forwards along the body, the tibio-tarsal articulation reaches the tip of the snout or beyond. Skin smooth, granular round the belly and under the thighs. Brown or olive above, generally with chevron-shaped dark bands across the back; a dark stripe between the eyes; a blackish streak along the canthus rostralis and above the tympanum; limbs cross-barred; hinder side of thighs generally black-and-white marbled; sometimes a white stripe on each side of the back; whitish beneath, immaculate or marbled with brown. Male with an internal vocal sac.

Ecuador.

<i>a.</i> ♀.	Andes of Ecuador.	Mr. Fraser [C.]. (Type of <i>H. conspicillatus</i> .)
<i>b, c-d, e, f, g, h.</i> ♂ ♀.	W. Ecuador.	Mr. Fraser [C.].
<i>i-k.</i> ♂ ♀.	Intac, Ecuador.	Mr. Buckley [C.].
<i>l.</i> ♀.	Paitanga, Ecuador.	Mr. Buckley [C.].
<i>m-n.</i> ♀ & yg.	Sarayacu, Ecuador.	Mr. Buckley [C.].

Hylodes bocchii, Blgr.
-b. ♀ + yg. Vera Paz. Salvin.

-d. ♀ Mexico. Fisher.

d. Agr.	Lagoa, Sta. Catharina.	Michael
e. f. ♀ + hyr.	Sta Catharina	"
g. ♀	Theresopolis, "	Frühstörfer
h. ♀	Chapala Plateau, Matto Grosso.	Moore.
i. k. ♀ nys.	Theresopolis.	Göldi

8. *Hylodes gollmeri*.

Hylodes gollmeri, *Peters, Mon. Berl. Ac.* 1863, p. 40.

? *Hylodes güntneri*, *Steindachn. Verh. zool.-bot. Ges. Wien*, xiv. 1864, p. 246, pl. 17. f. 1, and *Novara, Amph.* p. 53, pl. 4. f. 1-7.

Tongue oval, slightly nicked behind. Vomerine teeth in two oblique series behind the choanæ. Snout subacuminate, prominent, with distinct canthus rostralis; nostril much nearer the tip of the snout than the eye; the orbital diameter equals the distance between the eye and the nostril; interorbital space broader than the upper eyelid; tympanum distinct, half the diameter of the eye. Fingers moderate, first not extending beyond second; toes moderate, with a rudiment of web extending as a slight fringe along the sides of the toes; disks and subarticular tubercles well developed; a small oval inner, and a rather indistinct rounded outer metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the tip of the snout or beyond. Skin smooth, or with very small scattered tubercles on the back, sides, and eyelids; a narrow glandular lateral fold from the eye to the sacral region; belly smooth. Brown or olive above; sides of head dark brown; a black streak along the canthus rostralis and over the temporal region; a dark spot between the eyes; sides with rather indistinct oblique dark stripes; limbs cross-barred; hinder side of thighs dark brown, spotted with white; throat speckled with brown.

Venezuela; Ecuador; (Brazil?).

a, b. ♀.

Quito.

c. ♀.

Sarayacu, Ecuador.

Mr. Buckley [C.].

From Dr. Steindachner's description and figures I cannot find a single structural character differentiating his *H. güntneri* from this species, and am therefore inclined to regard both as identical.

9. *Hylodes rugosus*.

Hylodes rugosus, *Peters, Mon. Berl. Ac.* 1873, p. 610.

Tongue rounded behind. Vomerine teeth in two small groups behind the choanæ. Tympanum half the size of the eye. Disks of fingers and toes much smaller than in *H. cruentus* and rounded. Upper surfaces covered with granulations of different size and longitudinal glandular ridges, two of which form a)(on the back; belly smooth. Black or blackish green above; between the anterior part of the eyes a light cross band; dark bars from the eye to the lip; on each side a light longitudinal stripe; limbs cross-barred; hinder side of thighs black, white-spotted; anterior lower surfaces black, white-spotted; lower belly, lower surface of thighs, soles, and the three inner toes white. Allied to *H. conspicillatus*.

Chiriqui.

10. *Hylodes griseus*.

Hyla grisea, *Hallow. Proc. Ac. Philad.* 1860, p. 485.

Hylodes griseus, *Cope, Proc. Ac. Philad.* 1863, p. 48; *Steindachn. Verh. zool.-bot. Ges. Wien*, 1864, p. 245, pl. 17. f. 2.

? *Hylodes fenestratus*, *Steindachn. l. c.* pp. 249 & 552, pl. 16. f. 1.

Hylodes, sp.?, *Hensel, Arch. f. Naturg.* 1867, p. 161.

Hylodes henselii, *Peters, Mon. Berl. Ac.* 1870, p. 648.

Tongue oval, emarginate. Vomerine teeth in two short oblique series behind the choanæ. Snout rather elongate and rounded, longer than the orbital diameter; canthus rostralis strong; tympanum one fourth the extent of orbit. Disks of fingers and toes moderate; a single metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the tip of the snout. Skin of belly smooth. A **W**-shaped spot on the occiput; limbs cross-barred.

Brazil.

11. *Hylodes bocourtii*.

Hylodes bocourti, *Brocchi, Bull. Soc. Philom.* (7) i. p. 130, and *Miss. Sc. Mex., Batr.* p. 50, pl. 16. f. 2.

Tongue subcircular, entire. Vomerine teeth in two small groups, close to the hinder edge of the choanæ. Snout rounded, with rounded canthus rostralis; tympanum distinct, one third the diameter of the eye. First and second fingers of nearly equal length; toes with a rudiment of web; disks rather developed; a single metatarsal tubercle. Hind limb long. Skin smooth. A black temporal spot; two small black spots behind the scapulæ; arms marbled with black; hind limbs marbled with brown; greenish white beneath.

Coban, Guatemala.

12. *Hylodes augusti*.

Hylodes augusti, (*Dugès*) *Brocchi, Bull. Soc. Philom.* (7) iii. p. 21, and *Miss. Sc. Mex., Batr.* p. 52, pl. 16. f. 1.

Tongue subcircular, slightly nicked behind. Vomerine teeth in two small groups somewhat behind the choanæ. Snout short, rounded; nostril near the tip of the snout; tympanum distinct, smaller than the eye. First finger longer than second; tips of fingers and toes truncate; (when at rest, this animal is said to bend its fingers and toes in the same way as a man bends his fingers in playing on the pianoforte, a position which I have noticed also in *Hylodes leptopus*;) two metatarsal tubercles. Skin minutely tubercular above, smooth beneath. Light yellow above, spotted with brown; limbs cross-barred.

Guanajuato and Tupafo, Mexico.

Hylodes plicifera, Blgr.

a. Agr. Iguarasse, Pernambuco. Ramage.
(Type)

Hylodes latrans, Cope.

x. Ys. Duval Co., Texas. Taylor.

a-c. ♀ Ventanas, from a mine 1,000 ft. deep.
Forrer.

13. *Hylodes lineatus*.

Hylodes lineatus, part., *Günth. Cat.* p. 91.

Rana lineata, *Schneid. Hist. Amph.* p. 138; *Gravenh. Delic.* p. 44, pl. 8. f. 2.

— *fusca*, *Schneid. l. c.* p. 130.

— *castanea*, *Shaw, Zool.* iii. p. 128.

Bufo lineatus, *Daud. Rain.* p. 105, and *Rept.* viii. p. 138.

— *albonotatus*, *Daud. Rept.* viii. p. 185.

— *schneideri*, *Merr. Tent.* p. 177.

Hylodes lineatus, *Dum. & Bibr.* p. 625; *Günth. Proc. Zool. Soc.* 1859, p. 89.

Tongue subcircular, slightly nicked behind. Vomerine teeth in two transverse straight or slightly arched series, behind and between the choanæ. Snout rounded, with indistinct canthus rostralis; nostril nearer the tip of the snout than the eye; the width of the eye equals its distance from the nostril; interorbital space broader than the upper eyelid; tympanum distinct, three fourths the diameter of the eye. Fingers moderate, first extending a little beyond second; toes moderate, quite free; disks of fingers and toes very small; subarticular tubercles well developed; two metatarsal tubercles. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the eye. Upper surfaces covered with very small, closely set tubercles; lower surfaces smooth. Blackish brown above; a white stripe on each side of the back, on the upper eyelid and on the side of the snout, meeting its fellow on the tip of the snout; a large white spot on the loin; a few large white spots, sometimes confluent, on the hinder side of the thighs and the inner side of the legs; lower surfaces light brown, dotted with white. Male with a subgular vocal sac.

Guianas; Ecuador; Peru.

a. ♀.	Vryheits Lust, Deme- rara.	Rev. W. J. Turner [C.].
b. Several spec., ♀ & hgr.	Andes of Ecuador.	Mr. Fraser [C.].
c. ♂.	Canelos, Ecuador.	Mr. Buckley [C.].
d-f. ♀ & yg.	Moyobamba, Peru.	A. H. Roff [C.].

14. *Hylodes lentus*.

Hylodes lineatus, part., *Günth. Cat.* p. 91.

Hylodes lentus, *Cope, Proc. Ac. Philad.* 1862, p. 151.

— *riisei*, *Reinh. & Lütke. Vidensk. Meddel.* 1863, p. 208.

Tongue elliptic, entire or slightly nicked behind. Vomerine teeth in two long arched series across the palate, behind the choanæ. Snout conical, truncate, a little longer than the orbital diameter; canthus rostralis moderate; nostril much nearer the tip of the snout than the eye; interorbital space broader than the upper eyelid; tympanum distinct, half the diameter of the eye. Fingers moderate, first and second equal; toes moderate, with a slight

rudiment of web; disks very small; subarticular tubercles well developed; two small metatarsal tubercles. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the eye, or a little beyond. Skin smooth, sometimes minutely granular on the head and back. Light brown above, spotted or marbled with dark brown; a more or less defined light stripe on each side; hind limbs not cross-barred. Male with a subgular vocal sac.

West Indies.

<i>a-d.</i> ♂ ♀.	S. Domingo.	M. Sallé [C.].
<i>e, f, g.</i> ♀ & hgr.	S. Domingo.	
<i>h-i.</i> ♂ ♀.	St. Thomas.	Mus. Copenhag. [P.]. (As typical of <i>H. rüsei</i> .)

15. *Hylodes luteolus*.

Hylodes luteolus, *Günth. Cat.* p. 93.

Litoria luteola, *Gosse, Nat. Soj. Jamaica*, p. 366, pl. 7.

Tongue elliptic, entire. Vomerine teeth in two long arched series across the palate, behind the choanæ. Snout conical, truncate, with moderate canthus rostralis, slightly longer than the orbital diameter; nostril much nearer the tip of the snout than the eye; interorbital space broader than the upper eyelid; tympanum distinct, nearly two thirds the diameter of the eye. Fingers moderate, first and second equal; toes moderate, with a rudimentary web; disks very small; subarticular tubercles well developed; two small metatarsal tubercles. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches hardly the orbit. Skin smooth, granular under the thighs; a ventral disk. Brown, dark-speckled; a dark-brown band from the tip of the snout through the eye to the shoulder; hind limbs cross-barred; sometimes a light vertebral line and another on the hinder side of the thighs; brownish beneath.

West Indies.

<i>a, b.</i> ♀.	Jamaica.	Mr. Gosse [P.].
<i>c.</i> ♀.	Jamaica.	Capt. Parry [P.].

16. *Hylodes planirostris*.

Hylodes planirostris, *Cope, Proc. Ac. Philad.* 1862, p. 153.

Tongue elongate, oval, slightly nicked. Vomerine teeth in two long curved series, commencing behind and opposite to the external border of the inner nares; they are separated by a considerable space mesially. Snout abruptly truncated; tympanum half the size of the eye. Disks of fingers and toes small; two metatarsal tubercles. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the eye. Skin smooth above and below; sides rugose. General colour reddish brown; the loreal



Aylodes discoidalis, Peracca.
a. c. ♀ Tucuman. Turin Mus. (Types).

region, a band between the eyes, one above the tympanum, and some dorsal spots darker; beneath light brownish. Male with a subgular vocal sac.

New Providence Island, Bahamas.

17. *Hylodes binotatus*.

Rana binotata, *Spix, Test. Ran. Bras.* p. 31, pl. 20. f. 3.

Enydrobius abbreviatus, *Wagl. Syst. Amph.* p. 202.

Hylodes rugulosus, *Peters, Mon. Berl. Ac.* 1870, p. 648.

— *binotatus*, *Peters, Mon. Berl. Ac.* 1872, p. 206.

Tongue entire or slightly nicked. Vomerine teeth in two transverse curved series behind the choanæ. Snout subacuminate, longer than the orbital diameter; canthus rostralis very distinct; nostril much nearer the tip of the snout than the eye; interorbital space as broad as the upper eyelid; tympanum distinct, half the diameter of the eye. First finger much longer than second; toes quite free; disks very small; subarticular tubercles much developed. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches nearly the tip of the snout. Numerous glandular lines along the back; a fold above the tympanum; lower surfaces smooth. Brownish above; a dark chevron-shaped spot between the eyes; a dark streak from the tip of the snout through the eye to the shoulder; limbs cross-barred; uniform whitish beneath. Male with a subgular vocal sac.

Brazil.

a. ♂.

Rio Janeiro.

C. Darwin, Esq. [P.].

18. *Hylodes cuneatus*.

Hylodes cuneatus, *Cope, Proc. Ac. Philad.* 1862, p. 152.

Tongue elongate-oval, slightly nicked behind. Vomerine teeth in two curved series, which begin opposite and much behind the external border of the choanæ, and converge posteriorly. Head large, broader than the body; snout elongate, acute; tympanum round, half the size of the eye. Two metatarsal tubercles. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches nearly the tip of the snout. Skin of upper surfaces, except that of the snout, granulated; a slight dermal fold from the tip of the snout to the end of the coccyx, and another, very delicate, commencing behind each orbit, and descending upon the side, then ascending towards the iliac region; smooth beneath. Above blackish grey; snout lighter; a light line from the anterior border of orbit to labial commissure, and one from the posterior border to the tympanum; a light band from each supercilium to the coccygeal region; limbs indistinctly barred with brown; beneath whitish, very minutely punctulated with brown, except upon the abdomen. A variety is almost entirely black.

E. Cuba.

19. *Hylodes laticeps*.

Hylodes laticeps, *Günth. Cat.* p. 92.

Hylodes laticeps, *A. Dum. Ann. Sc. Nat.* (3) xix. p. 178; *Dum. & Bibr.* ix. p. 408, pl. 99; *Brocchi, Miss. Sc. Mex., Batr.* p. 49.

Tongue subcircular. Vomerine teeth in two small oblique series behind the choanæ. Head very large, broader than the body; snout subacuminate; tympanum large, higher than broad. First finger longer than second; toes webbed at the base; disks rather small. Skin smooth above and beneath; a glandular fold from the eye to the angle of the mouth, and another along each side of the back; ventral disk very distinct. Dark greenish brown above, yellowish white below.

Yucatan; Tehuantepec.

20. *Hylodes melanostictus*.

Lithodytes melanostictus, *Cope, Journ. Ac. Philad.* (n. s.) viii. 1876, p. 169, pl. 23. f. 10.

Hylodes melanostictus, *Brocchi, Miss. Sc. Mex., Batr.* p. 56.

Tongue subcircular, a little emarginate behind. Vomerine teeth in two short transverse series behind the choanæ. Head flat, wide; snout projecting a little; canthus rostralis distinct; nostril more than twice as far from orbit as from tip of snout; tympanum a rather narrow vertical oval, one fourth the size of the eye. First finger shorter than second; disks of fingers large, of toes moderate. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches beyond the tip of the snout. Skin everywhere smooth. Brownish grey above, dirty white beneath; limbs cross-banded rather distantly with blackish, the bars extending on the front and back faces of the femur as well as on the upper surfaces; a white vertebral band, bounded on the sides at different places with blackish; a pink band extends from each tympanum to the end of the ilium, and is broadly bordered with black on the outer side, this colour extending on the sides of the animal as oblique black spots; a black streak from the tip of the snout through the eye, over the tympanum to the angle of the mouth; two black bars from the orbit to the lip.

Pico Blanco, Costa Rica.

21. *Hylodes pelvicolus*.

Lithodytes pelvicolus, *Cope, Proc. Amer. Philos. Soc.* xvii. 1877, p. 89.

Vomerine teeth in short, approximated, transverse fasciculi behind the choanæ. Head short, very wide; snout not projecting, with distinct canthus rostralis; nostril terminal; lateral borders of fronto-parietals elevated into longitudinal crests, which on the vertex

♀ Monte Redondo, Bebedero, Costa Rica.
Underwood.



are abruptly incurved without meeting; tympanum distinct, a broad vertical oval, as large as the eye. Disks and subarticular tubercles of fingers and toes small. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the eye. Skin smooth; two suprascapular longitudinal dermal folds, converging towards the middle line without meeting. General colour ashen grey; a large black spot below the eye, and another above and on the tympanum; a dark band with a pale superior border above each ilium; belly and concealed faces of hind limbs yellow, coarsely reticulated with blackish; throat thickly dusted with the same.

W. coast of Central America.

22. *Hylodes megacephalus*.

Lithodytes megacephalus, Cope, *Journ. Ac. Philad.* (n. s.) viii. 1876, p. 110, pl. 23. f. 11.

Tongue oval, entire. Vomerine teeth in two short approximated series entirely behind the choanæ. Head very large, broader than the body; canthus rostralis distinct; nostril nearer the tip of the snout than the eye; orbits oblique, the superciliary borders rising from the end of their anterior third into a strong ridge, which runs in a straight line and terminates abruptly in a slight thickening at the posterior border of the cranium; posterior half of the cranium above deeply grooved; tympanum distinct, vertically oval, one third the diameter of the eye. Limbs short. Toes entirely free; disks of fingers and toes small; a single metatarsal tubercle. Skin smooth above and beneath, with the following exceptions:—A dermal fold extends from each exoccipital region on each side of the back, pursuing a concave course to the middle of the transverse process of the sacrum; a similar fold extends from the vent on each side, in an oblique direction, to the end of the transverse sacral process; sides of body areolated. Light ash above; a black spot extends from the tympanum to the scapula, and sends a line to the eye; limbs cross-barred; hinder side of thighs black, marbled distally with ash; sole of foot black; lower surfaces white, marbled with black.

Pico Blanco, Costa Rica.

23. *Hylodes gulosus*.

Lithodytes gulosus, Cope, *l. c.* p. 112.

Very closely allied to *H. megacephalus*, from which it differs in the following points:—Head relatively smaller. No dermal plicæ. Dark leather-brown above; a black spot across the tympanum, and one under the eye; brown beneath, irregularly marbled with white. Size of *Leptodactylus pentadactylus*.

Pico Blanco, Costa Rica.

24. *Hylodes diastema*.

Lithodytes diastema, *Cope, Journ. Ac. Philad.* (n. s.) viii. 1876, p. 155.

Tongue obpyriform, rounded behind. Vomerine teeth in two very short transverse patches behind the choanæ. Snout depressed and narrowly truncate, with obtuse canthus rostralis; the diameter of the orbit equals the length of the snout; nostril subterminal; tympanum indistinct, with a diameter of less than half that of the eye-slit; eustachian tubes minute. First finger shorter than second; toes short; disks of fingers and toes large. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches beyond the tip of the snout. Above dark brown; darker brown between the eyes, which is bordered with paler anteriorly; below pale brown.

Panama.

25. *Hylodes surdus*. (PLATE XIV. fig. 3.)

Tongue oval. Vomerine teeth in two small groups close together behind the choanæ. Snout rounded, as long as the orbital diameter, with distinct canthus rostralis; nostril equally distant from the eye and the tip of the snout; interorbital space as broad as the upper eyelid; no tympanic disk; eustachian tubes minute. Fingers moderate, first shorter than second; toes moderate, quite free; disks well developed; subarticular tubercles moderate; two metatarsal tubercles, the outer rather indistinct. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches between the eye and the tip of the snout. Skin smooth; belly slightly granular. Dark brown above; snout lighter; a dark streak from the tip of the snout through the eye to the shoulder; three dark streaks from the eye to the lip; three chevron-shaped markings on the back; limbs with dark, light-edged cross bars; hinder side of thighs black, white-spotted; throat and belly brown, marbled with darker; flanks and lower surface of hind limbs yellowish, marbled with dark brown. From snout to vent 37 millim.

Ecuador.

a. ♀.
b. ♀.

W. Ecuador.
S. America.

Mr. Fraser [C.].

26. *Hylodes glandulosus*.

Hylodes glandulosus, *Bouleng. Bull. Soc. Zool. France*, 1880, p. 47.

Tongue subcircular, slightly nicked behind. Vomerine teeth in two groups directed backwards, commencing from the inner hinder edge of the choanæ. Snout short, rounded, with distinct canthus rostralis; tympanum hardly one third the diameter of the eye. Toes quite



Aylodes ramagii, Blgr.
a. Ayr. Iguarasse, Enambuco. Ramag.
(Type)

free; disks of fingers and toes large. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the nostril. Skin of the head, back, and sides strongly tubercular; belly slightly granular. Blackish brown above; four or five whitish bars across the thighs; hinder side of thighs and lower surfaces blackish brown, spotted with white.

Ecuador.

27. *Hylodes devillii*.

Hylodes devillei, *Bouleng. Bull. Soc. Zool. France*, 1880, p. 47.

Tongue oval, entire. Vomerine teeth in two groups directed backwards, commencing from the inner hinder edge of the choanæ. Snout short, rounded, with distinct canthus rostralis; fronto-parietals concave, their edges elevated into two prominent ridges; tympanum distinct, one third the diameter of the eye. Toes with a slight rudiment of web; disks of fingers and toes large. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the tip of the snout. Upper surfaces distinctly tubercular; a glandular dorso-lateral fold; belly slightly granular. Dark brown above, light brown beneath, marbled with darker.

Ecuador.

28. *Hylodes ricordii*.

Hylodes ricordii, *Dum. & Bibr.* p. 623.

Euhyas ricordii, *Cope, Proc. Ac. Philad.* 1862, p. 154.

Lithodytes ricordii, *Cope, Check-list N.-Amer. Rept.* p. 31.

Tongue oblong, entire. Vomerine teeth in a zigzag series across the whole width of the palate, behind the choanæ. Snout sub-acuminate; nostril nearer the tip of the snout than the eye; tympanum two thirds the diameter of the eye. Fingers and toes slender; disks moderate, transversely oval; subarticular tubercles well-developed; two metatarsal tubercles. Hind limb one third longer than head and body. Head and body covered with small granuli-form warts; a fold behind the tympanum; belly granular. Greyish or whitish fulvous above, with numerous blackish spots, often confluent on the head and back; limbs not cross-barred.

Cuba; Bahamas; Southern Florida.

29. *Hylodes oxyrhynchus*.

Hylodes oxyrhynchus, *Günth. Cat.* p. 92.

Hylodes oxyrhynchus, *Dum. & Bibr.* p. 622.

Euhyas oxyrhynchus, *Cope, Proc. Ac. Philad.* 1862, p. 154.

Tongue oblong, nicked behind. Vomerine teeth in a zigzag series across the whole width of the palate, behind the choanæ. Snout acuminate; nostril nearer the tip of the snout than the eye; tym-

panum three fourths the diameter of the eye. Fingers and toes fringed, dilated into small disks; subarticular tubercles well developed. The hind limb being carried forwards along the body, the foot extends beyond the tip of the snout. Skin smooth; belly granular. Fulvous above, clouded with reddish brown; limbs cross-barred.

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30. *Hylodes auriculatus*.

Hylodes ricordii, Günth. Cat. p. 92.

Hylodes auriculatus, Cope, Proc. Ac. Philad. 1862, p. 152.

— *antillensis*, Reinh. & Lütke. Vidensk. Meddel. 1862, p. 209.

Tongue oval, slightly nicked behind. Vomerine teeth in two oblique, slightly arched series behind and between the choanæ. Snout rounded, as long as the orbital diameter; canthus rostralis angular; nostril much nearer the tip of the snout than the eye; interorbital space as broad as, or a little broader than, the upper eyelid; tympanum distinct, half the diameter of the eye, close to it. Fingers moderate, first slightly shorter than second; toes short, first as long as second, free; disks large; two metatarsal tubercles. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches nearly the tip of the snout. Skin with small glandules above, granular on the belly. Brown above, mottled with darker; a more or less distinct dark streak from the tip of the snout through the eye to the shoulder; limbs indistinctly cross-barred. Male with a subgular vocal sac.

West Indies.

a-c. ♂.

d. ♀.

St. Domingo.

St. Domingo.

M. Sallé [C.]

C. Taylor, Esq. [P.]

31. *Hylodes martinicensis*.

Hylodes martinicensis, Günth. Cat. p. 92.

Hylodes martinicensis, Tschudi, Batr. p. 77; Dum. & Bibr. p. 620, pl. 89. f. 2; Steindachn. Novara, Amph. p. 55; Bavay, Ann. Sc. Nat. (5) xvii. art. 16; Peters, Mon. Berl. Ac. 1876, p. 709, pl. i.

Tongue subcircular, slightly nicked behind. Vomerine teeth in two small oblique series behind the choanæ. Snout obtuse, as long as the greatest orbital diameter; canthus rostralis angular; nostril much nearer the tip of the snout than the eye; interorbital space as broad as, or broader than, the upper eyelid; tympanum scarcely half the diameter of the eye. Fingers moderate, first as long as, or a little shorter than, the second; toes moderate, without distinct web; disks well developed; two small metatarsal tubercles. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the eye or beyond. Upper surfaces smooth or with small glandules; belly granular; a ventral disk. Greyish or brownish above, with indistinct darker markings on the head and back, and cross bars on the hind limbs; a dark streak below the

Several species Dominica. G. F. Angus.

g. R. ♀	h. r.	Martinique.	Mus. Comp. Zool.
h.	Several spec.	Dominica.	French Sugar
m.	"	"	Ramage.
n.	"	Barbados.	Feilding
o. ♀		St Eustatius.	Markham.
p. q.	Several spec.	St. Vincent.	Smith.
r.	♀	"	.

canthus rostralis and on the temporal region. Male with an internal vocal sac.

West Indies.

<i>a.</i> ♀.	St. Domingo.	Sir A. Smith [P.].
<i>b-d.</i> ♀ & hgr.	St. Domingo.	
<i>e.</i> Several spec.: ♂, ♀, & hgr.	St. Vincent.	
<i>f.</i> Hgr.	Barbadoes.	

32. *Hylodes varians*.

Hylodes varians, *Gundl. & Peters, Mon. Berl. Ac.* 1864, p. 390.

Tongue heart-shaped elongate, nicked behind. Vomerine teeth in two small oblique series behind the choanæ. Head broader than the body; snout flat, with distinct canthus rostralis; nostrils close to the tip of the snout; tympanum distinct, half the diameter of the eye. Disks of fingers and toes well developed; subarticular tubercles moderate. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the eye. Skin smooth, of belly granular. Brown or grey above, punctate or marbled with brown; a triangular brown spot between the eyes; hind limbs more or less distinctly cross-barred. Male with a subgular vocal sac.

Cuba.

33. *Hylodes bogotensis*.

Hylodes bogotensis, *Peters, Mon. Berl. Ac.* 1863, p. 407.

Tongue subcircular, slightly nicked behind. Vomerine teeth in two short oblique series commencing near the inner hind edge of the choanæ. Snout rounded, as long as the orbital diameter; canthus rostralis rounded; nostril nearer the tip of the snout than the eye; interorbital space broader than the upper eyelid; tympanum distinct, one third the diameter of the eye. Fingers moderate, first shorter than second; toes moderate, with a slight rudiment of web; disks and subarticular tubercles well developed; two small metatarsal tubercles, the outer rather indistinct. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the eye. Skin smooth, granular on the belly and under the thighs; no ventral disk. Uniform brown above. Male with a subgular vocal sac.

Colombia.

<i>a-b.</i> ♀ & hgr.	Sta. Fé de Bogotá.	Prof. Peters [P.].
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34. *Hylodes bicumulus*.

Hylodes bicumulus, *Peters, Mon. Berl. Ac.* 1863, p. 410.

Tongue very large, indistinctly nicked behind. Vomerine teeth in two small round groups close together, behind the choanæ. Snout

rounded, with distinct canthus rostralis; nostril much nearer the tip of the snout than the eye; the diameter of the latter equals its distance from the nostril; tympanum distinct, one third the diameter of the eye. First finger shorter than second; disks of fingers and toes very large, broader than long; subarticular tubercles well developed; two metatarsal tubercles, the outer very small; sometimes a small cutaneous spur on the tibio-tarsal articulation. The hind limb being carried forwards along the body, the tibio-tarsal articulation does not reach the tip of the snout. Skin smooth above; small scattered tubercles on the sides of the body and on the upper eyelids; a curved fold above the tympanum; belly granular. Flesh-coloured, reddish yellow above; sides of head and body grey, separated from the upper parts by a black streak; limbs cross-barred; hinder side of thighs dark brown; lower surfaces white, vermiculated with black.

Caracas.

35. *Hylodes cerasinus*.

Hylodes cerasinus, Cope, *Journ. Ac. Philad.* (n. s.) viii. 1876, p. 112, pl. 26. f. 4.

Tongue a narrow oval. Vomerine teeth in two well-separated fasciculi behind the choanæ. Snout narrowed towards the end, not produced, with distinct canthus rostralis; nostril nearer the tip of the snout than the eye: tympanum distinct, very small, one eighth the area of the eye. Digits long, free; disks truncate; first finger shorter than second. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the tip of the snout. Skin smooth above; sides and belly granular. General colour brown above, white below; a rose-coloured vertebral band; upper lip crossed with pale lines; anterior half of sides finely reticulate with black, groin cherry-red; upper posterior face of femur and inner face of tibia cherry-red; lower posterior face of femur brown, punctate with white.

Pico Blanco, Costa Rica.

36. *Hylodes cruentus*.

Hylodes cruentus, Peters, *Mon. Berl. Ac.* 1873, p. 609; Brocchi, *Miss. Sc. Mex., Batr.* p. 54.

Tongue rounded behind. Vomerine teeth in two small, rounded, crooked groups behind the choanæ. Snout longer than the diameter of the eye, with distinct canthus rostralis; nostril close to the tip of the snout; tympanum distinct, vertically oval, hardly one third the size of the eye. First finger shorter than second; disks of fingers and toes much developed, truncate. Sides of body with small tubercles and longitudinal glandules; belly granular; no fold on the chest. Red above, with scattered black specks; a black streak below the canthus rostralis; front and hinder side of thighs

Hylodes wüchii Btgs.
a. b. ♀ rhy. Trinidad. Caracciolo.

a-b. ♀ *Hylodes vertebralis*, Blgr.
Intac. Buckley (Types)

brown; hind limbs indistinctly cross-barred; lower surfaces yellowish; a few small black spots on the lower belly.

Chiriqui.

37. *Hylodes unistrigatus*. (PLATE XIV. fig. 4.)

Hylodes unistrigatus, Günth. *Proc. Zool. Soc.* 1859, p. 416.

Habit of *Hyla arborea*. Tongue oval, slightly nicked behind. Vomerine teeth in two small oblique groups behind the choanæ. Snout rounded, as long as the orbital diameter, with distinct canthus rostralis; nostril nearer the tip of the snout than the eye; inter-orbital space broader than the upper eyelid; tympanum distinct, not quite half the diameter of the eye. Fingers moderate, first shorter than second; toes short, free; disks large; subarticular tubercles well developed; two metatarsal tubercles, the outer sometimes indistinct. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the tympanum or the eye. Skin of upper surfaces smooth, of sides tubercular; belly granular; a strong fold across the chest. Brown or olive above, marbled or striped with darker; sometimes a light vertebral line. Male with a subgular vocal sac.

Ecuador; Bolivia.

<i>a-b, c.</i> ♂ ♀.	W. Ecuador.	Mr. Fraser [C.]. (Types.)
<i>d.</i> ♀.	Paitanga, Ecuador.	Mr. Buckley [C.].
<i>e.</i> Several spec.:	Bolivia.	
♂, ♀, & yg.		

38. *Hylodes buckleyi*. (PLATE XIV. fig. 5.)

Tongue oval, entire. Vomerine teeth in two oblique groups considerably behind the choanæ. Snout rounded, as long as the greatest orbital diameter; canthus rostralis distinct; nostril nearer the tip of the snout than the eye; fronto-parietals a little concave, their edges slightly prominent, their width almost twice that of the upper eyelid; tympanum distinct, a little more than one third the diameter of the eye. Fingers moderate, first shorter than second; toes moderate, quite free, slightly fringed; disks and subarticular tubercles moderate; two metatarsal tubercles. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the tympanum or the eye. Skin of upper surfaces with small smooth warts; belly granular. Blackish brown above, uniform; in one specimen there are a lighter stripe across the interorbital space and two others, close together, along the back; throat and belly brown, marbled with darker, in one specimen yellowish dotted with brown; lumbar region and lower surface of limbs yellowish-and-brown marbled. From snout to vent 45 millim.

Ecuador.

<i>a-d.</i> ♀.	Intac.	Mr. Buckley [C.].
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39. *Hylodes whymperi*.

Habit of *Hyla arborea*. Tongue oval, entire. Vomerine teeth in two oblique series behind the choanæ. Snout rounded, as long as the orbital diameter, with distinct canthus rostralis; nostril nearer the tip of the snout than the eye; interorbital space a little broader than the upper eyelid; tympanum hidden. Fingers moderate, first shorter than second; toes moderate, quite free; disks and subarticular tubercles moderate; two metatarsal tubercles. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the angle of the mouth. Skin of upper surfaces tubercular; on the back the tubercles are confluent into more or less distinct longitudinal lines; belly granular. Dark olive-brown above, sometimes with a few light spots, greyish or reddish brown; immaculate, or marbled with dark brown, beneath; upper lip whitish; sometimes the front and hinder sides of the thighs tinged with magenta-red. Male with an internal subgular vocal sac. From snout to vent 27 millim.

Ecuador.

- | | | |
|-----------|---|----------------------------|
| a-b. ♂ ♀. | Tortorillas, Chimborazo
(13,200 feet). | Edward Whymper, Esq. [C.]. |
| c. ♀. | Cotocachi (13,000 feet). | Edward Whymper, Esq. [C.]. |

40. *Hylodes curtipes*. (PLATE XIV. fig. 6.)

Tongue oval, slightly nicked behind. Vomerine teeth in two oblique groups considerably behind the choanæ. Snout rounded, as long as the orbital diameter; canthus rostralis distinct; nostril nearer the tip of the snout than the eye; interorbital space broader than the upper eyelid, with a median concavity formed by a frontoparietal fontanelle; tympanum slightly distinct, about one third the diameter of the eye. Fingers moderate, first shorter than second; toes short, free, slightly fringed; disks of fingers and toes very small; subarticular tubercles moderate; two metatarsal tubercles. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the shoulder. Skin of upper surfaces with small tubercles; back with more or less distinct glandular longitudinal folds; belly granular. Olive above, with indistinct darker markings, sometimes spotted with white, or with a brown vertebral band; a dark streak from the tip of the snout, through the eye to the shoulder; sides of body marbled with dark brown; beneath generally immaculate, whitish.

Ecuador.

- | | | |
|-------------------|--------|-------------------|
| a. Many spec., ♀. | Intac. | Mr. Buckley [C.]. |
|-------------------|--------|-------------------|

I have hesitated to place this species in the genus *Hylodes*, the apical dilatation of the fingers and toes being very weak, and an



extensive fontanelle being present. It bears, however, such analogy to *H. buckleyi* that I do not think it should be separated generically from it. *H. curtipes* is evidently a link towards the genus *Borborocætes*.

41. *Hylodes leptopus*.

Hylodes leptopus, *Günth. Cat.* p. 93.

Batrachyla leptopus, *Bell, Zool. Beagle, Rept.* p. 43, pl. 18. f. 5;
Espada, Viag. Pacif., Vertebr. pl. 3. f. 6.

Hylodes leptopus, *Cunningham, Trans. Linn. Soc.* xxvii. p. 468.

Cystignathus macrodactylus, *Günth. Proc. Zool. Soc.* 1881, p. 18.

Tongue subcircular, slightly nicked behind. Vomerine teeth in two small groups between the choanæ. Snout rounded, as long as the orbital diameter; canthus rostralis indistinct; nostril equally distant from the eye and the tip of the snout; interorbital space as broad as, or a little broader than, the upper eyelid; tympanum distinct, half the diameter of the eye. Fingers long, first much shorter than second; toes moderate, with a slight rudiment of web; tips of fingers and toes dilated, truncate; the terminal phalanges bent down, as those of a man playing on the pianoforte; subarticular tubercles well developed; two small metatarsal tubercles. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the eye. Skin of upper surfaces with small smooth tubercles; belly granular. Olive above, marbled with blackish; a blackish triangular spot between the eyes, another from eye to lip; generally two large spots on each side of the body; limbs cross-barred. Male with a subgular vocal sac, and brown rugosities on the inner side of the first finger.

Chili; W. coast of Patagonia.

a. ♀.	Valdivia.	C. Darwin, Esq. [P.]. (Type.)
b. ♀.	Puerto Bueno, Magellan Straits.	Dr. Cunningham [P.].
c-e. ♂.	Puerto Bueno, Magellan Straits.	Dr. Coppinger [C.]. (Types of <i>Cystignathus macrodactylus</i> .)

42. *Hylodes galdii*.

Pristimantis galdi, *Espada, Jorn. Sc. Lisb.* iii. (1870) p. 61, and *Viag. Pacif., Vertebr.* pl. 3 bis. f. 6.

Tongue oval. Vomerine teeth in two oblique, slightly arched series, beginning from the inner hinder edge of the choanæ. Snout subtriangular, truncate, with acute canthus rostralis; frontoparietals with prominent serrated edges; tympanic bones also forming a serrated crest; tympanum distinct. Fingers and toes free, long and slender, with well-developed disks. Hind limbs long. Skin minutely granular above; belly granular. Belly dark, white-spotted.

Ecuador.

43. *Hylodes sulcatus*.

Hylodes sulcatus, Cope, *Proc. Ac. Philad.* 1874, p. 126.

Tongue round, entire. Vomerine teeth in two short curved series entirely behind the choanæ, and not extending outwards beyond their middle. Head very wide; a strong ridge extends along the superciliary border to the posterior border of the cranium, enclosing a groove with its fellow; tympanum vertically oval, a little smaller than the eye. Fingers very short, without disks; toes with well-marked disks. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the nostril. Skin of upper surfaces rugose, with numerous short, generally symmetrical folds, two of which cross the suprascapular region, two on the sides, two on each side of the back, &c.; belly granular. Deep brown above, white below; a pale spot below the interval between orbit and tympanum; limbs cross-barred; femora pale, marbled behind.

Nauta, Upper Amazon.

44. *Hylodes biporcatus*.

Strabomantis biporcatus, Peters, *Mon. Berl. Ac.* 1863, p. 405; *Espada*, *An. Soc. Esp.* i. p. 85.

Limnophys napæus, *Espada*, *Jorn. Sc. Lisb.* iii. p. 60.

Tongue entire. Vomerine teeth in two arched series behind the choanæ. Head large, broad, with bony ridges; canthus rostralis distinct; nostril equally distant from the eye and the tip of the snout; eyes obliquely directed forwards; interorbital space deeply concave, the edges of the fronto-parietals being prominent, crest-like; tympanum very distinct, a little smaller than the eye. First finger longer than second; toes with a rudiment of web; tips of fingers, not of toes, slightly though distinctly dilated; subarticular tubercles very prominent; two metatarsal tubercles, the inner elongate, very prominent, the outer rounded and very small. The hind limb being carried forwards along the body, the foot extends beyond the tip of the snout. Skin smooth, minutely glandular; a few very small pointed warts on the upper eyelid; belly granular. Dark brown above, with a few black yellow-edged spots; beneath brown, dotted with yellow, or brown-and-white marbled.

Veragua; Ecuador.

45. *Hylodes cornutus*.

Limnophys cornutus, *Espada*, *Jorn. Sc. Lisb.* iii. p. 60.

Strabomantis cornutus, *Espada*, *An. Soc. Esp.* i. p. 85, and *Viaj. Pacif., Vertebr.* pl. 3. f. 4.

Tongue heart-shaped. Vomerine teeth in two arched series behind the choanæ. Head large, broad; canthus rostralis distinct; interorbital space deeply concave, the edges of the fronto-parietals



being prominent, crest-like; tympanum distinct, large. First finger longer than second; toes free; tips of fingers very slightly, of toes more distinctly dilated. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches in front of the eye. Upper surfaces warty, the warts conical, spine-like on the limbs; upper eyelid with a horn-like dermal appendage; a)-(shaped glandular fold on the nape; one or two pairs of slightly curved folds on the middle of the back; beneath granular.

Ecuador; Colombia.

a. Yg.

Bogotá.

10. CERATOPHRYS.

Ceratophrys, (Boie) Wied, *Beitr.* p. 569; Wagler, *Syst. Amph.* p. 203; Tschudi, *Batr.* p. 81; Dum. & Bibr. viii. p. 428; Günth. *Cat.* p. 24; Cope, *Nat. Hist. Rev.* 1865, p. 112, and *Journ. Ac. Philad.* (2) vi. 1866, p. 93.

Phrynoceros, Tschudi, *l. c.*

Stombus, Gravenh. *Isis*, 1825, p. 952; Cope, *Journ. Ac. Philad.* (2) vi. 1866, p. 94.

Pyxicephalus, sp., Dum. & Bibr. viii. p. 442.

Trigonophrys, Hallow. *Proc. Ac. Philad.* 1856, p. 298.

Pyxicephalus, Günth. *Cat.* p. 24.

Odontophrynus, Reinh. & Lütke. *Vidensk. Meddel.* 1861, p. 159.

Tomopterna, Cope, *Nat. Hist. Rev.* 1865, p. 112, and *Journ. Ac. Philad.* (2) vi. 1866, p. 93.

Pupil horizontal. Tongue heart-shaped, free behind. Vomerine teeth. Tympanum more or less distinct, or hidden. Fingers free; toes more or less webbed, the tips not dilated. Outer metatarsals united. Omosternum cartilaginous; sternum a cartilaginous plate, which ossifies in the fully adult state. Terminal phalanges simple.

South America.

The development of the upper eyelid into a horn-like dermal appendage has been considered one of the chief characters of the genus *Ceratophrys*. But in *C. ornata* it is so little marked that it evidently should be used merely as a specific character. The species hitherto separated as *Odontophrynus* (Reinh. & Lütke.) or *Pyxicephalus* (Günth. nec Tschudi) are therefore united with *Ceratophrys*, the whole forming a very natural genus.

Synopsis of the Species.

I. Upper eyelid with several pointed papillæ.

A paratoid-like swelling of the skull

above and somewhat behind the eye. 1. *bigibbosa*, p. 222.

II. Upper eyelid produced into a horn-like appendage.

A. No dorsal shield.

Sides of head and body with triangular
skinny appendages; metatarsal tu-

bercle reaching beyond the eye 2. *appendiculata*, p. 222.

Metatarsal tubercle not reaching beyond
the eye; interorbital space concave; a
very distinct ridge between the eyes. 3. *boiei*, p. 223.

Interorbital space deeply concave 4. *fryi*, p. 223.

Head very much elevated; tympanum
visible 5. *cornuta*, p. 224.

B. A bony dorsal shield.

Head with symmetrical ridges 6. *dorsata*, p. 225.

III. Upper eyelid slightly pointed, triangular.

A bony dorsal shield 7. *ornata*, p. 225.

IV. Upper eyelid simple.

No large gland on the calf 8. *americana*, p. 226.

A large paratoid-like gland on the calf. 9. *cultripes*, p. 226.

The tip of the fourth toe does not reach
beyond the eye 10. *leyboldii*, p. 227.

1. *Ceratophrys bigibbosa*.

Ceratophrys boiei, Hensel, *Arch. f. Naturg.* 1867, p. 121.

— *bigibbosa*, Peters, *Mon. Berl. Ac.* 1872, p. 204.

Resembles *C. boiei*, but differs by remarkable characters. The upper eyelid is not produced into a horn, but bears several pointed papillæ, as in *Asterrophrys turpicola*. There is a round swelling of the skull, resembling a paratoid, above and somewhat behind the eye. No dermal ridge on the back. This species is founded on a young specimen (36 millim.).

Rio Grande do Sul, Brazil.

2. *Ceratophrys appendiculata*. (PLATE XV. fig. 1.)

Ceratophrys appendiculata, Günth. *Ann. & Mag. N. H.* (4) xi. p. 418.

— *cafferi*, Camerino, *Att. Ac. Torin.* xiv. p. 880.

Vomerine teeth in two small groups between the choanæ. Head large, depressed; nostril nearer the eye than the tip of the snout; snout terminating in a short triangular flap; upper eyelid produced in a horn-like appendage, the length of which is more than the greatest orbital diameter; interorbital space concave; tympanum hidden. First and second fingers equal; toes webbed at the base; subarticular tubercles well developed; inner metatarsal tubercle oval, blunt; no tarsal fold. The hind limb being carried forwards



i. h. ♂♀ Rio Capivari, Parana. Michael
l. yg. Theresopolis. Jöldi
m. ♂ Blumenau, St. Catharina. Heute

along the body, the metatarsal tubercle reaches beyond the eye. Skin minutely granular above and beneath; sides of head and body and upper surface of limbs with triangular skinny appendages. A very prominent dermal ridge unites the horns across the interorbital space; two others begin on the upper eyelid, approach each other on the middle of the back, diverge again, and finally unite into a point above the vent. Greyish above, with symmetrical brown markings; limbs cross-barred; throat brown. Male with a subgular vocal sac. Brazil.

a. ♂.

Brazil.

(Type.)

3. *Ceratophrys boiei*.

Ceratophrys boiei, *Günth. Cat.* p. 25.

Ceratophrys boiei, *Wied, Beitr.* i. p. 592, and *Abbild.*; *Dum. & Bibr.* p. 437; *Steindachn. Novara, Amph.* p. 28.

Stombus cornutus, *Gravenh. Isis*, 1825, p. 952.

— *boiei*, *Gravenh. Delic.* p. 50, pl. 9. f. 1 & 2.

Ceratophrys granosa, *Cuv. R. A.*; *Guérin, Iconogr. Rept.* pl. 26. f. 2.

Vomerine teeth in two small groups between the choanæ. Head large, not bony; nostril equally distant from the eye and the tip of the snout, or a little nearer the former; upper eyelid produced into a horn-like appendage, the length of which equals at least three fourths of the diameter of the eye; interorbital space concave; tympanum hidden. First finger scarcely longer than second; toes webbed at the base; subarticular tubercles much developed; inner metatarsal tubercle oval, blunt; no tarsal fold. The hind limb being carried forwards along the body, the metatarsal tubercle reaches the eye. Skin granular above and beneath; the sides and upper surface of the limbs intermixed with large conical tubercles; a dermal ridge, formed of large granules, unites the tips of the horns across the interorbital space; two others begin on the upper eyelids, approach on the middle of the back, diverge again, and finally unite in a point above the vent. Brownish above; a large spot below the eye, a festooned band bordering the dorsal ridges, and cross bars on the limbs dark brown; a spot on each side of the snout, and the middle of the back between the ridges, sometimes whitish.

Brazil.

a-b. ♀.

Bahia.

c. Hgr.

Bahia.

d, e-f, g, h. ♀ & hgr.

S. America.

Dr. Wucherer [C.].

4. *Ceratophrys fryi*. (PLATE XV. fig. 2.)

Ceratophrys fryi, *Günth. Ann. & Mag. N. H.* (4) xi. p. 417.

Vomerine teeth in a straight, slightly interrupted series between the choanæ. Head large; nostril a little nearer the eye than the tip of the snout; upper eyelid produced into a horn-like appendage, the

length of which equals the diameter of the eye; interorbital space deeply concave; tympanum hidden. First finger considerably longer than second; toes webbed at the base; subarticular tubercles much developed; inner metatarsal tubercle oval, blunt. The hind limb being carried forwards along the body, the metatarsal tubercle reaches the eye. Skin granular above and beneath, the granules of unequal size; the two dorsal lines of tubercles, which are so conspicuous in *C. boiei*, are absent on the anterior and middle portions of the back, but represented by two short series commencing in the sacral region and converging into a point above the vent. Brown above, indistinctly marbled with darker; the snout white.

Brazil.

a. ♀. Serra de Mantiqueira, A. Fry, Esq. [P.]. (Type.)
Minas Geraes.

5. *Ceratophrys cornuta*.

Ceratophrys megastoma, Günth. Cat. p. 25.

Seba, i. p. 115, t. 72. f. 1 & 2.

Rana cornuta, Linn. Mus. Ad. Frid. p. 48, and Syst. Nat. i. p. 356;

Schneider, Hist. Amph. p. 125; *Shaw*, Nat. Misc. iii. pl. 76.

Bufo cornutus, Daud. Rain. p. 102, pl. 38, and Rept. viii. p. 214;

Lutr. Rept. ii. p. 117, f. 1.

Rana megastoma, Spix, Test. Ran. p. 27, pl. 4. f. 1.

Ceratophrys dorsata, part., Wagl. Syst. Amph. p. 204.

— *cornuta*, Schleg. Abbild. t. 10. f. 1 & 2; *Peters*, Mon. Berl. Ac. 1872, p. 204.

Phrynoceros vaillantii, Tschudi, Batr. p. 82.

Ceratophrys daudini, Cuv. R. A.; Dum. & Bibr. p. 440.

— *megastoma*, Espada, Viaj. Pacif., Vertebr. p. 26.

Vomerine teeth in two small groups between the choanæ (absent in spec. a). Head enormous, very much elevated, bony; a broad ridge from the eye to above the tympanum; nostril nearer the eye than the tip of the snout; eye very small; the upper eyelid produced in a horn-like appendage, the length of which equals the diameter of the eye; interorbital space concave; tympanum moderately distinct. First finger longer than the second; toes two-thirds webbed, the web as if mutilated; subarticular tubercles not very prominent; inner metatarsal tubercle oval, blunt; a very distinct tarsal fold. The hind limb being carried forwards along the body, the metatarsal tubercle reaches between the eye and the nostril. Upper surfaces with small tubercles, larger and conical on the flanks; beneath granular. Greyish above, the median part of the back lighter; head with symmetrical markings; back with angular dark-brown spots; sides marbled with dark brown; limbs with regular dark cross bars. Male with a subgular vocal sac, and the throat black.

Surinam, N. Brazil.

a. ♂. Surinam.
b. Yg. Santarem.

Mr. Wickham [C.].



e. ♀ Rio Grande do Sul. Ihering.
f-g. ♂ ♀ Porto Real, Prov. Rio Janeiro. Hardy.

a. ♀ Ceratophrys calcarata, Blgr.
Colombia. Fischer (Type).

6. *Ceratophrys dorsata*.

Ceratophrys cornuta, *Günth. Cat.* p. 24.

Rana cornuta, *Tilesius*, *Magaz. Naturf. Fr. Berl.* iii. p. 90, pl. 3, and *Krusenstern's Reise*, pl. 6.

Ceratophrys dorsata, *Wied. Beitr. Naturg. Bras.* i. p. 576, and *Abbild.; Wagl. Icon.* t. 22. f. 1 & 2, and *Syst. Amph.* p. 204; *Tschudi, Batr.* p. 81; *Dum. & Bibr.* p. 431; *Peters, Mon. Berl. Ac.* 1872, p. 204.

Stombus dorsatus, *Gravenh. Delic.* p. 49.

Two very small groups of vomerine teeth between the choanæ. Head enormous, bony, with symmetrical ridges and patches of tubercles; nostril nearer the eye than the tip of the snout; eye small; upper eyelid produced into a horn-like appendage, the length of which does not equal the width of the orbit; interorbital space concave; tympanum moderately distinct. Back with a club-shaped bony shield. First finger longer than second; toes slightly webbed; subarticular tubercles not very prominent; inner metatarsal tubercle large, oval, compressed, with blunt edge; a rather indistinct tarsal fold. The hind limb being carried forwards along the body, the metatarsal tubercle reaches between the eye and the nostril. Skin of upper surfaces with small tubercles; a cutaneous ridge on each side of the dorsal shield; smooth or slightly granular beneath. Brown above, the middle of the head and back, the club-shaped figure, a stripe on the scapular region, and cross bands on the legs bluish. Male with a subgular vocal sac.

Brazil.

- | | | |
|--------------------|-------------|---|
| a-b. ♂ ♀. | Brazil. | (The male contained in its stomach a full-grown <i>Leptodactylus ocellatus</i> .) |
| c. ♀. | Brazil. | |
| d. Adult, stuffed. | S. America. | Lieut. Maud, R.N. [P.]. |

7. *Ceratophrys ornata*.

Ceratophrys ornata, *Günth. Cat.* p. 25.

Uperodon ornatum, *Bell, Zool. Beagle, Rept.* p. 50, pl. 20. f. 2.

Trigonophrys rugiceps, *Hallow. Proc. Ac. Philad.* 1856, p. 298, and *Journ. Ac. Philad.* 1858, pl. 36.

Ceratophrys ornata, *Günth. Trans. Zool. Soc.* xi. p. 220, pl. 45.

Vomerine teeth in two small groups between the choanæ. Palatine ridges more or less distinctly denticulated. Head large, bony, rough; nostril nearer the eye than the tip of the snout; upper eyelid slightly pointed, triangular; interorbital space slightly concave, broader than the upper eyelid; tympanum slightly distinct. A bony dorsal shield. Fingers very short, first longer than second; toes very short, half webbed; subarticular tubercles not much developed; inner metatarsal tubercle very large, shovel-shaped, black-edged; a slight tarsal fold. The hind limb being carried forwards along the body, the metatarsal tubercle does not reach the eye. Skin tubercular above, granular beneath. Yellowish or

greenish above, with large insuliform, light-edged olive spots; sometimes vinaceous red lines between the spots. Male with a subgular vocal sac.

E. S. America.

<i>a-b.</i> ♂ ♀.	Buenos Ayres.	Ch. Darwin, Esq. [P.]. (Types.)
<i>c.</i> ♀.	Buenos Ayres.	E. W. White, Esq. [P.].
<i>d.</i> ♀.	Parana.	

8. *Ceratophrys americana*.

Pyxicephalus americanus, part., *Günth. Cat.* p. 24.

Pyxicephalus americanus, *Dum. & Bibr.* p. 446; *Bell, Zool. Beagle, Rept.* p. 40, pl. 18. f. 2; *D'Orbigny, Amér. mérid.* v. p. 10, pl. 14. f. 1-4; *Espada, Viag. Pacif., Vertebr.* p. 20.

Vomerine teeth in two straight groups a little behind the choanæ. Head moderate, not bony; nostril equally distant from the eye and the tip of the snout; eyelid normal; interorbital space flat, narrower than the upper eyelid; tympanum hidden. First finger longer than second; toes one-third webbed; subarticular tubercles well developed; inner metatarsal tubercle very large, shovel-shaped, black-edged; a short tarsal fold. The hind limb being carried forwards along the body, the metatarsal tubercle does not reach the eye. Skin tubercular above and beneath; a few elongated glands on the back. Olive above, with large, insuliform, light-edged spots; a light vertebral stripe.

E. S. America.

<i>a.</i> ♀.	Montevideo.	
<i>b.</i> Yg.	Montevideo.	Charles Darwin, Esq. [P.].
<i>c-d.</i> ♂ ♀.	Buenos Ayres.	E. W. White, Esq. [C.].

9. *Ceratophrys cultripes*.

Pyxicephalus americanus, part., *Günth. Cat.* p. 24.

Odontophrynus cultripes, *Reinh. & Lütke. Vidensk. Meddel.* 1861, p. 159, pl. iii. f. 1.

Pyxicephalus cultripes, *Cope, Proc. Ac. Philad.* 1863, p. 51.

Vomerine teeth in two slightly oblique series between the choanæ. Head moderate, not bony; nostril a little nearer the eye than the tip of the snout; upper eyelid simple; interorbital space scarcely concave, a little narrower than the upper eyelid; tympanum hidden. First finger longer than second; toes one-third webbed; subarticular tubercles well developed; inner metatarsal tubercle very large, shovel-shaped, brown-edged; a very distinct tarsal fold. The hind limb being carried forwards along the body, the metatarsal tubercle does not reach the eye. Skin tubercular above and beneath; two or three parotoid-like glands on each side of the neck and front part of the back; a large parotoid-like gland on

#	Arg.	Argentine Republic.	White.
f	"	S. Rio de la Plata	Gairdner.

♂	Rio Grande do Sul.	Shering.
♀	S. Rio de la Plata.	Gairdner.
Yg.	Uruguay.	
i. ♂	S. Lorenzo, R. Grande do Sul.	Shering.
♀	Assuncion, Paraguay.	Bohls.

the calf. Brown or olive above, marbled with darker; sometimes a rather indistinct light median line on the hinder half of the body.

E. S. America.

a-b. ♀.

Brazil.

c. ♀.

Tropical America.

Sir A. Smith [P.].

10. *Ceratophrys leyboldii*.

Pyxicephalus leyboldi, *Espada, Viaj. Pacif., Vertebr.* p. 15.

Differs from *C. americana* by its shorter limbs. The hind limb being carried forwards along the body, the tip of the fourth toe reaches the anterior corner of the eye.

N. Chili.

11. EDALORHINA.

Edalorhina, *Espada, Jorn. Sc. Lisb.* 1870, p. 58.

Bubonias, *Cope, Proc. Ac. Philad.* 1874, p. 124.

Pupil horizontal. Tongue oval, notched and free behind. Vomerine teeth present or absent. Tympanum very distinct. Fingers free; toes free or nearly so, the tips not dilated. Outer metatarsals united. Omosternum cartilaginous; sternum with a bony style. Sacral diapophysis slightly dilated. Terminal phalanges simple.

W. S. America.

Synopsis of the Species.

- A dermal ridge across the interocular space;
toes webbed at the base 1. *perezii*, p. 227.
- No dermal ridge across the interocular space;
toes webbed at the base 2. *buckleyi*, p. 228.
- No dermal ridge across the interocular space;
toes quite free. 3. *plicifrons*, p. 228.

1. *Edalorhina perezii*. (PLATE XVI. fig. 2, upper view of head.)

Edalorhina perezii, *Espada, l. c. and Viaj. Pacif., Vertebr.* p. 105, pl. 1. f. 5.

Vomerine teeth in two oblique series commencing from the inner hind edge of the choanæ. Snout angular, with well-marked canthus rostralis; nostril much nearer the tip of the snout than the eye; interorbital space narrower than the upper eyelid; tympanum oval, its long axis directed upwards and forwards, as large as the eye. First finger not extending beyond second; toes with a rudiment of web; subarticular tubercles well developed; two small metatarsal, and three or four conical tarsal tubercles. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the eye, or nearly so far. Skin nearly smooth; a strong fold from

the eye to the groin; below this fold, on the scapular region, a large parotoid gland; another similar gland on the loin; a more or less distinct fold along the vertebral line; a few conical tubercles on the snout; edge of the upper eyelid with three or four horn-like dermal processes; a strong, bow-shaped, raised fold from one eyelid to the other; generally four round tubercles on the back, and one on each thigh; a raised fold across the middle of the calf. Olive above, marbled with darker; loreal regions obliquely striped; sides deep black, the colour extending on the sides of the belly and then passing round in front of the thighs; lumbar gland yellow and black; limbs cross-barred above, black and yellow beneath. Male with a subgular vocal sac and brown rugosities on the inner side of the first finger.

Ecuador.

<i>a-c.</i> ♀.	Canelos.	Mr. Buckley [C.].
<i>d.</i> ♂.	Sarayacu.	Mr. Buckley [C.].
<i>e.</i> ♀.	Ecuador.	Mr. Buckley [C.].
<i>f.</i> ♀.	Puerto del Mairo.	Mr. H. Veitch [P.].

2. *Edalorhina buckleyi*. (PLATE XVI. fig. 1.)

No fold between the eyelids; a fold from the middle of each eyelid to the sacral region; a fold from the tip of the snout to the occiput; an elongated tubercle on the middle of the back. Back longitudinally striped with brown. Otherwise as in *E. perezii*.

Ecuador.

<i>a.</i> ♂.	Canelos.	Mr. Buckley [C.].
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3. *Edalorhina plicifrons*.

Bubonias plicifrons, Cope, *Proc. Ac. Philad.* 1874, p. 124.

Vomerine teeth none. Tympanum oval, its long axis directed upwards and forwards, and nearly equal in length to that of the eye. Toes free. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the tympanum. Skin everywhere smooth except in the following regions of the upper surface:—a strong elevated fold from the superciliary border to the inguinal gland, below which on the scapular region is a boss like a parotoid gland; a fold from the inner border of the eyelid to the end of the sacral diapophysis; a fold from the end of the snout to the end of the coccyx on the median line; a short conic tubercle stands at its extremity on the snout; edge of the eyebrow with three dermal processes or "horns." Brown above, pure white below; sides pure black, the colour extending on the sides of the abdomen and then passing round in front of the femora, thus enclosing an anchor-shaped space of white; a black spot on the posterior part of the inguinal glands; limbs black and white beneath.

Nauta, Upper Amazon.



12. PALUDICOLA.

Paludicola, *Wagl. Syst. Amph.* p. 206.

Pleurodema, *Tschudi. Batr.* p. 84; *Cope, Nat. Hist. Rev.* 1865, p. 113, and *Journ. Ac. Philad.* (2) vi. p. 95.

Cystignathus, sp., *Dum. & Bibr.* viii. p. 407.

Leiuperus, *Dum. & Bibr.* viii. p. 420; *Günth. Cat.* p. 22; *Cope, Nat. Hist. Rev.* p. 113, and *Journ. Ac. Philad.* p. 95.

Pleurodema, sp., *Günth. Cat.* p. 31.

Gomphobates, *Reinh. & Lütke. Vidensk. Meddel.* 1861, p. 172; *Cope, Nat. Hist. Rev.* p. 113, and *Journ. Ac. Philad.* p. 96.

~~Eupomphix, *Steindachner. Sitz. Abh. Wien*, xlviii. 1863, p. 189, and *Verh. zool.-bot. Ges. Wien*, 1864, p. 271.~~

Lystris, *Cope, Proc. Ac. Philad.* 1868, p. 312.

Pupil horizontal. Tongue subcircular, oval or elliptic, entire or indistinctly nicked, and free behind. Vomerine teeth present or absent; if present, between the choanæ. Tympanum indistinct or hidden. Fingers free; toes free or incompletely webbed, the tips not dilated. Outer metatarsals united. Omosternum cartilaginous; sternum with a bony style. Terminal phalanges simple.

Tropical America.

Synopsis of the Species.

I. A well-developed lumbar gland; no tarsal tubercle.

- | | |
|---|-------------------------------|
| Toes nearly half webbed; lumbar gland at least as long as the head | 1. <i>bufonia</i> , p. 230. |
| Toes nearly quite free; first finger not extending beyond second | 2. <i>bibronii</i> , p. 231. |
| Toes nearly quite free; first finger extending a good deal beyond second .. | 3. <i>brachyops</i> , p. 232. |
| Tibio-tarsal articulation reaching the eye | 4. <i>cinerea</i> , p. 232. |

II. A well-developed lumbar gland; a tarsal tubercle 5. *fuscomaculata*, p. 233.

III. Lumbar gland none or indistinct; a tarsal tubercle.

A. Back without longitudinal folds.

- | | |
|---|----------------------------------|
| Tongue heart-shaped; vomerine teeth .. | 6. <i>diplolistris</i> , p. 233. |
| Head small; a dark lateral stripe | 7. <i>biligonigera</i> , p. 234. |
| Head moderate; back with large insuliform spots | 8. <i>albifrons</i> , p. 234. |

B. Back with longitudinal folds.

- | | |
|---|-------------------------------|
| The distance between the tarsal and inner metatarsal tubercles is more than that between the two metatarsal tubercles | 9. <i>kröyeri</i> , p. 235. |
| The distance between the tarsal and inner metatarsal tubercles is less than that between the two metatarsal tubercles | 10. <i>henselii</i> , p. 235. |

IV. No lumbar gland; no tarsal tubercle.

A. Skin of the back with large flat warts.

Interorbital space as broad as the upper eyelid; toes united at the base by a slight web 11. *marmorata*, p. 235.

Interorbital space as broad as the upper eyelid; no trace of membrane between the toes 12. *verrucosa*, p. 236.

Interorbital space very narrow 13. *sagittifera*, p. 236.

B. Two glandular lines forming an

X-shaped figure on the back 14. *falcipes*, p. 236.

C. Skin smooth, or with a few very small granules on the back.

Habit slender 15. *nitida*, p. 237.

Habit stout 16. *mevicensis*, p. 237.

1. *Paludicola bufonia*.

Leiuperus salarius, Günth. Cat. p. 22.

Pleurodema bufonium, Günth. l. c. p. 31.

Pleurodema bufonium, Bell, Zool. Beagle, Rept. p. 39, pl. 17. f. 5.

Leiuperus salarius, Bell, l. c. p. 29, pl. 18. f. 1.



Lower surface of foot.

Tongue subcircular, indistinctly nicked behind. Vomerine teeth in two small oblique groups between the choanae. Snout rounded, as long as the orbital diameter; nostril equally distant from the eye and the tip of the snout; interorbital space as broad as the upper eyelid; tympanum indistinct. Fingers short, depressed, first extending slightly beyond second; toes short, nearly half webbed, the membrane extending as a fringe to their tips; subarticular tubercles small; two strong, oval, compressed, metatarsal tubercles. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the tympanum. Skin with very small warts above; a very large lumbar gland, at least as long as the head, depressed, elliptical; another subcircular gland on the shoulder. Olive above, with small darker spots; lumbar glands of the colour of the back, with large irregular brown spots; limbs cross-barred; sometimes a light vertebral stripe.

Patagonia.

a, b. ♀.

Port Desire.

C. Darwin, Esq. [P.]. (Types.)

c. Yg.

Port Desire.

C. Darwin, Esq. [P.]. (Type of

Leiuperus salarius.)



t.u. ♂, ♀.
v.g. ♂, ♀.

Laiharaiso (M. L. L.)
S. Chili. James.

2. *Paludicola bibronii*.

Pleurodema bibroni, vars. A & C, *Günth. Cat.* p. 31.

Pleurodema bibroni, *Tschudi, Batr.* p. 85; *Girard, U.S. Expl. Exped., Herp.* p. 38, pl. 4. f. 33-38; *Espada, Viaj. Pacif., Vert.* p. 87.

Cystignathus bibroni, *Dum. & Bibr.* p. 410, pl. 87. f. 2; *Guichen. in Gay, Chile, Rept.* p. 96, pl. 7. f. 1.

Pleurodema darwini, *Bell, Zool. Beagle, Rept.* p. 36, pl. 17. f. 3; *Hensel, Arch. f. Naturg.* 1867, p. 133.

— *elegans*, *Bell, l. c.* p. 37, pl. 17. f. 4; *Girard, l. c.* p. 40, pl. 4. f. 28-32.

Cystignathus elegans, *Guichen. l. c.* p. 101.



Lower surface of foot.

Tongue subcircular, entire or indistinctly nicked behind. Vomerine teeth in two small oblique groups between the choanæ. Snout rounded, slightly longer than the greatest orbital diameter; nostril equally distant from the eye and the tip of the snout; interorbital space generally narrower than the upper eyelid; tympanum indistinct or quite hidden. Fingers moderate, first not extending beyond second; toes moderate, with a rudimentary web extending as a fringe along their sides; subarticular tubercles moderate; a small oval inner, and a small rounded, sometimes oval, outer metatarsal tubercle, both very distinct. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches hardly the tympanum. Skin smooth, or with small warts above; a very prominent oval lumbar gland, generally larger than the eyeball. Greyish or olive above, marbled with brown; lumbar gland black and white; sometimes a light vertebral stripe; anterior half of the male's throat black. Male with a subgular vocal sac.

S. America.

a. ♀.	Maldonado.	C. Darwin, Esq. [P]. (Type of <i>P. darwini</i> .)
b. Several spec.: ♀, hgr., & yg.	Talcahuano.	Dr. Cunningham [C].
c-d, e, f, g, h-i. ♀ & hgr.	Chili.	
k. ♀.	Chiloe.	C. Darwin, Esq. [P]. (Type of <i>C. elegans</i> .)
l. ♀.	Chiloe.	
m. ♀.	Shores of the Pacific Ocean.	
n, o-g, r-s. ♂, ♀, & hgr.	S. America.	C. Darwin, Esq. [P].

3. *Paludicola brachyops*.

Pleurodema bibroni, var. B, *Günth. Cat.* p. 32.

Pleurodema elegans, (non *Bell*) *Steindachn. Sitz. Wien. Ac.* xviii. pl. 1. f. 1-5, and *Novara, Amph.* p. 14.

Lystris brachyops, *Cope, Proc. Ac. Philad.* 1868, p. 312.

Pleurodema sachsii, *Peters, Mon. Berl. Ac.* 1877, p. 460.



Lower surface of foot.

Tongue subcircular, indistinctly nicked behind. Vomerine teeth in two small oblique groups between the choanæ. Snout rounded, as long as the orbital diameter; nostril a little nearer the tip of the snout than the eye; interorbital space narrower than the upper eyelid; tympanum indistinct. Fingers moderate, first extending a good deal beyond second; toes short, with a rudimentary web extending as a slight fringe along their sides; subarticular tubercles moderate; two strong, oval, shovel-shaped metatarsal tubercles, the outer a little longer than the inner. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the shoulder. Skin of upper surfaces with a few small flat warts; a very prominent oval lumbar gland, as large as the eyeball. Olive-brown, with a few indistinct darker markings; a large black spot on the inguinal region, including the gland which bears a few small white specks; loins and hinder side of thighs rose-coloured, immaculate; upper side of thighs with three large black spots; the male's throat grey. Male with a subgular vocal sac.

Colombia; Venezuela; N. Brazil.

a, b. ♂ & yg.

Venezuela.

Mr. Dyson.

4. *Paludicola cinerea*.

Pleurodema cinereum, *Cope, Proc. Amer. Philos. Soc.* xvii. 1877, p. 40.

Tongue a wide oval, with a slit-like notch behind. Vomerine teeth in small fasciculi between the choanæ. Snout oval, vertically truncate; nares terminal; membranum tympani distinct, its diameter one third that of the eye. Two metatarsal tubercles, the outer not prominent. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the middle of orbit. Skin with low warts on all the upper surfaces of the head and body; a moderate, oval inguinal gland. Colour above grey leaden, with indistinct darker plumbeous spots, of which the largest is between

f. ♂ ♀ Aruba. Hartw.

c. ♂ ♀ & ys. Paludicola brellii Peracca.
Tucuman. Turin Mus. (Types).

C-~~Ph.~~g. L. L'ange, R. grande do Sul. Thering.
i. Several specs, ♂♀. Asuncion, Paraguay. Ch.

the orbits; a black crescent on the inguinal gland; limbs dark cross-banded; hinder side of thighs darkly grey-spotted; lower surfaces dirty white; gular region grey dusted.

Juliaca, Peru (12,550 feet).

5. *Paludicola fuscomaculata*.

Eupemphix fuscomaculatus, Steindachn. *Verh. zool.-bot. Ges. Wien*, 1864, p. 272, pl. 13. f. 3.

Gomphobates fuscomaculatus, Steindachn. *Novara, Amph.* p. 12.

Lystris fuscomaculatus, Cope, *Proc. Ac. Philad.* 1868, p. 312.

Pleurodema granulosum, Espada, *Viaj. Pacif., Vert.* p. 95, pl. 1. f. 6.



Lower surface of foot.

Tongue elliptic. Vomerine teeth none. Snout rounded, as long as the orbital diameter; interorbital space slightly broader than the upper eyelid; tympanum hidden. Fingers moderate, first not extending beyond second; toes moderate, free; subarticular tubercles well developed; a small conical tubercle on the inner side of the tarsus, not far removed from the metatarsal tubercles; latter two, large, oval, compressed, sharp-edged. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches hardly the eye. Back with longitudinal flat glands; a flat round lumbar gland, somewhat larger than the eye. Greyish or olive above, marbled with darker, and with large, confluent, white-edged spots; limbs cross-barred; lumbar gland black, white-margined in front. Male with a singular vocal sac.

Brazil; Uruguay; Buenos Ayres.

- | | | |
|------------------|-------------------------------------|-------------------------|
| a. ♂. | Oran Salta, Buenos Ayres. | E. W. White, Esq. [C.]. |
| b. ♀, bad state. | Rio de Cordova, Argentine Republic. | E. Fielding, Esq. [P.]. |

[*Eupemphix nattereri*, Steindachn. Sitz. Wien. Ak. xlviii. p. 189, pl. 1. f. 6-9, appears to agree in every respect with this species, except in the absence of a tarsal tubercle.—Cuyaba, Brazil.]

6. *Paludicola diplolistris*.

Cystignathus diplolistris, Peters, *Mon. Berl. Ac.* 1870, p. 648, pl. 2. f. 2.

Habit and coloration as in *P. bilronii*, but without lumbar gland, with shorter fingers and toes, the two metatarsal tubercles larger and shovel-shaped, and a tubercle under the tarsus. Tongue heart-

shaped. Vomerine teeth in two oblique series. Tympanum distinct, about one third the orbital diameter.

Ceára, Brazil.

7. *Paludicola biligonigera*. = *signifer*, *Se*

Liuperus biligonigerus, Cope, *Proc. Ac. Philad.* 1860, p. 517.

Gomphobates notatus, Reinh. & Lütke. *Vidensk. Meddel.* 1861, p. 173, pl. 4. f. 3; Hensel, *Arch. f. Naturg.* 1867, p. 138; Steindachn. *Novara, Amph.* p. 11.

Pleurodema biligonigera, Cope, *Proc. Ac. Philad.* 1862, p. 352.

Leiuperus albounotatus, Steindachn. *Verh. zool.-bot. Ges. Wien*, 1864, p. 272, pl. 13. f. 3, & p. 551.

Gomphobates biligonigerus, Cope, *Proc. Amer. Philos. Soc.* xi. p. 168.

Paludicola notata, Peters, *Mon. Berl. Ac.* 1872, p. 223.

Tongue small, elliptic, entire. Vomerine teeth none. Head small; snout short, rounded; nostril nearer the tip of the snout than the eye; interorbital space as broad as the upper eyelid; tympanum hidden. Fingers moderate, first not extending beyond second; toes moderate, with a slight rudiment of web; subarticular tubercles well developed; tarsus furnished with a minute, acute tubercle near the middle of its posterior face; two compressed, oval metatarsal tubercles. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches hardly the eye. Skin smooth, or with small warts above. Above olive, marbled with darker; a dark lateral stripe; a black inguinal spot. Male with a black throat and two external vocal sacs; during the breeding-season the inner side of the first digit is furnished with brown rugosities.

Brazil.

a. ♂. Lagoa Santa.

b-c. Hgr. Bahia.

d. ♀.

Para.

Prof. Reinhardt [P.].

R. Graham, Esq. [P.].

8. *Paludicola albifrons*.

Bufo albifrons, Spix, *Test. Ran. Bras.* p. 48, pl. 19. f. 2; Peters, *Mon. Berl. Ac.* 1872, p. 222.

Paludicola albifrons, Wagl. *Syst. Amph.* p. 206.

Gomphobates marmoratus, Reinh. & Lütke. *Vidensk. Meddel.* 1861, p. 175, pl. 4. f. 4; Hensel, *Arch. f. Naturg.* 1867, p. 137; Steindachn. *Novara, Amph.* p. 12.

Leiuperus marmoratus, Burmeister, *Reise La Plata*, ii. p. 532.

Eupemphix nattereri, part., Steindachn. *Verh. zool.-bot. Ges. Wien*, 1864, p. 271.

Tongue elliptic. Vomerine teeth none. Snout rounded, as long as the orbital diameter; nostril nearer the tip of the snout than the eye; interorbital space as broad as the upper eyelid; tympanum hidden. Fingers moderate, first not extending quite as far as second; toes rather short; subarticular tubercles well developed; a small conical tubercle on the inner side of the tarsus; two oval,

f. ♀	Itaquara, Rio Grande do Sul.	Ihering
h. ♂ ♀	Lages, Sta. Catharina.	Michaelis.
♀	Iguarasse, Pernambuco.	Ramaze.
l. ♂ ♀	Colow. Resistencia.	Spegazzini.
Sev. ♂ ♀	Palmeira, Parana.	Grillo
" ♂ ♀	R. Tibagi.	
♂ ♀	Porto Real, R. Janeiro.	Hardy.
♀	S. Paulo.	Ihering.

Paludicola bischoffii, Blgr.

a. ♀ Mundo Novo, Rio grande do Sul.
Bischoff. (Type)

Paludicola fischeri, Blgr.

a. ♀ Venezuela. Fischer (Type)

compressed, metatarsal tubercles. The hind limb being carried forwards along the body, the tibio-tarsal articulation does not reach the eye. Skin nearly smooth above. Above with numerous insuliform dark-edged spots, arranged in cross bars upon the limbs. Male with two external subgular vocal sacs.

Brazil.

9. *Paludicola kröyeri*.

Gomphobates kröyeri, *Reinh. & Lütke. Vidensk. Meddel.* 1861, p. 176; *Steindachn. Novara, Amph.* p. 11.

Leiuperus ephippifer, *Steindachn. Verh. zool.-bot. Ges. Wien*, 1864, p. 277, pls. 14. f. 1, & 16. f. 5.

Tongue elliptic. Vomerine teeth none. Head rather small; snout rounded, as long as the orbital diameter; nostril nearer the tip of the snout than the eye; interorbital space not quite so broad as the upper eyelid; tympanum indistinct. Fingers moderate, first not extending quite as far as second; toes moderate, with slight rudiment of web; subarticular tubercles well developed; a small conical tubercle on the middle of the inner side of the tarsus; two oval, compressed metatarsal tubercles. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches hardly the eye. Back with longitudinal, undulated, glandular folds; skin smooth beneath. Olive or brownish above; a broad dark stripe from the eye to the groin; upper lip with vertical bars; back more or less distinctly striped; a more or less distinct blackish inguinal spot; hind limbs cross-barred. Male with a blackish throat and two external vocal sacs; the inner side of the first digit furnished with brown rugosities during the breeding-season.

S. America.

a-b. ♂.

Brazil.

Prof. Reinhardt [P.].

c. ♀.

S. America.

Charles Darwin, Esq. [P.] = *P. gracilis*

10. *Paludicola henselii*.

Gomphobates kröyeri, *Hensel, Arch. f. Naturg.* 1867, p. 139.

Paludicola henselii, *Peters, Mon. Berl. Ac.* 1872, p. 223.

Closely allied to *P. kröyeri*, from which it differs in the following characters:—The distance between the tarsal and the inner metatarsal tubercles is less than that between the two metatarsal tubercles. Dorsal folds nearly straight. Sides of the snout with a white line between two blackish ones, as in *Leptodactylus mystacinus*.

Rio Grande, Brazil.

11. *Paludicola marmorata*.

Leiuperus marmoratus, *Günth. Cat.* pp. 22 & 135.

Leiuperus marmoratus, *Dum. & Bibr.* p. 421; *D'Orb. Voy. Amér. mérid.* pl. 15. f. 1-4; *Tschudi, Faun. Per., Rept.* p. 168.

— *viridis*, *Tschudi, l. c.* p. 69; *Peters, Mon. Berl. Ac.* 1873, p. 623.

Tongue oval, entire. Vomerine teeth none. Snout rounded, as long as the orbital diameter; nostril equally distant from the eye and the tip of the snout; interorbital space as broad as the upper eyelid; tympanum rather indistinct. Fingers rather short, depressed, first extending slightly beyond second; toes rather short, united at the base by a slight web, which extends as a fringe on each side to their tips; subarticular tubercles moderate; a rather large oval inner, and a smaller rounded outer metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the shoulder. Above with large flat glands, sometimes forming longitudinal folds on the back; smooth beneath. Olive above, with large insuliform brown spots; a brown streak from the tip of the snout through the eye to the shoulder; sometimes a light vertebral stripe; beneath spotted with brown. Male with two subgular vocal sacs; during the breeding-season the inner side of the first digit is furnished with brown rugosities.

S. America.

a-e. Adult & hgr. ♂.
f. ♂.

High Peru.
S. Domingo (P).

M. Taczanowski [C.].

12. *Paludicola verrucosa*.

Leiuperus verrucosus, *Reinh. & Lütke. Vidensk. Meddel.* 1861, p. 171.

Differs from *P. marmorata* in the absence of any trace of membrane between the toes.

Brazil.

13. *Paludicola sagittifera*.

Leiuperus sagittifer, *Günth. Cat.* p. 135.

Leiuperus sagittifer, *Schmidt, Denkschr. Ak. Wien*, 1858, p. 240.

Differs from *P. marmorata* by the very narrow interorbital space and the very prominent eyes. Bluish brown above, spotted with chocolate-brown; a light arrow-shaped line from the snout to the vent.

Colombia.

14. *Paludicola falcipes*.

Liuperus falcipes, *Hensel, Arch. f. Naturg.* 1867, p. 134.

Vomerine teeth none. Tympanum hidden. Toes with a well-developed fringe; two metatarsal tubercles; a small tubercle under the forearm. Upper surfaces more or less covered with flat warts; two glandular lines begin behind the eyes, approach each other on the shoulders, then diverge again, thus forming an X-shaped figure. Colour and markings very variable; generally light grey above, with darker, indistinct markings. Male with a large subgular vocal sac.

Brazil.

Paludicola gracilis, Blgr.

- Many spec. ♀ + yg. Rio Grande do Sul. Ihering (Types).
South America Darwin.
— ? Salmin.
Many spec. ♂♀ Rio Grande do Sul. Ihering.
Uruguay.
X.n. ♂♀ Rio Grande do Sul. Ihering.
o. Agr. Basle Mus.
w. ♂♀ Palmeira, Parana. Grillo.
Several spec. Asuncion, Paraguay. Bohls.

- Many spec. yg. Rio Grande do Sul. Ihering.
Several. " ♂♀ " "
o. ♀ " "
y. Agr. Chapala Plateau, Matto Grosso. Moore.

Paludicola olfersii, Mart.

a ♂
b.e. ♀ + hgr.
f. ♀

Brasil
Sta Catharina
Theresopolis.

Boulenger.
Michaëlis.
Göldi

15. *Paludicola nitida*.

Liuperus nitidus, *Peters, Mon. Berl. Ac.* 1869, p. 878.

Tongue long and nearly rhomboidal. Vomerine teeth none. Habit slender. Snout subacuminate, rounded, as long as the orbital diameter; nostril nearer the tip of the snout than the eye; tympanum indistinct, one third the width of the eye. First finger a little shorter than second; subarticular tubercles well developed; similar tubercles on the palm and sole. Skin smooth, or with a few very small granules on the back. Greenish above, with darker markings; a dark triangular spot between the eyes; on each side in front of the thigh a blackish, light-green marbled, oval spot; limbs cross-barred; brownish beneath, indistinctly dotted with lighter.

Puebla, Mexico.

16. *Paludicola? mexicana*.

Leiuperus mexicanus, *Brocchi, Bull. Soc. Philom.* (7) i. p. 184.

Tongue discoid. Vomerine teeth none. Snout truncate, with angular canthus rostralis; tympanum very distinct, not half the width of the eye. Toes rather long and thin, with a very slight rudiment of web which does not extend on their sides; tips of fingers and toes swollen into small disks; subarticular tubercles well developed; two metatarsal tubercles, the inner oval and much larger than the outer. Skin smooth. Greyish above, marbled with black; a black spot behind the tympanum; white beneath, the throat speckled with grey.

Mexico.

13. *LEPTODACTYLUS**.

Leptodactylus, *Fitzing. Class. Rept.* p. 38.

Cystignathus, *Wagl. Syst. Rept.* p. 202; *Tschudi, Batr.* p. 78; *Günth.*

Cat. p. 27; *Cope, Nat. Hist. Rev.* 1865, p. 112, and *Journ. Ac. Philad.* (2) vi. 1866, p. 96.

Cystignathus, sp., *Dum. & Bibr.* viii. p. 392.

Crossodactylus, *Dum. & Bibr.* viii. p. 635.

? *Limnocharis*, *Bell, Zool. Beagle, Rept.* p. 32; *Günth. Cat.* p. 23;

Cope, Journ. Ac. Philad. (2) vi. p. 96.

Pleurodema, sp., *Günth. Cat.* p. 31.

Tarsopterus, *Reinh. & Lütke. Vidensk. Meddel.* 1861, p. 177.

Gnathophysa, *Cope, Nat. Hist. Rev.* 1865, p. 112, and *Journ. Ac.*

Philad. (2) vi. p. 96.

Entomoglossus, *Peters, Mon. Berl. Ac.* 1870, p. 647.

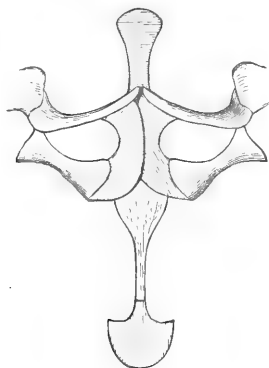
Pupil horizontal. Tongue oval or rounded, entire or slightly nicked, and free behind. Vomerine teeth behind the choanæ. Tympanum very distinct. Fingers and toes free, not or but slightly

* 1. *Cystignathus hylodes*, *Reinh. & Lütke. Vidensk. Meddel.* 1861, p. 168.—Brazil.

2. *Cystignathus discolor*, *Reinh. & Lütke. l. c.* p. 169.—Brazil.

3. *Hylodes hallowellii*, *Cope, Proc. Ac. Philad.* 1862, p. 153; *Cystignathus hallowellii*, *Cope, eod. loc.* 1868, p. 115.—Carthagena, Colombia.

dilated at the tips. Outer metatarsals united. Omosternum cartilaginous; sternum with a bony style. Terminal phalanges simple. Tropical America.



Sternal apparatus of *Leptodactylus pentadactylus*.

Synopsis of the Species.

I. Toes without distinct dermal margins.

1. Tongue regularly heart-shaped.

Tympanum half the width of the eye . . . 1. *pustulatus*, p. 239.

Tympanum two thirds the width of the eye; tibio-tarsal articulation not reaching the eye 2. *rhodonotus*, p. 239.

2. Tongue oval or elliptic, entire or slightly nicked behind.

A. Tips of toes dilated into small but distinct disks.

Tibio-tarsal articulation reaching the eye . . . 3. *hyledactylus*, p. 240.

B. Tips of toes not dilated.

a. Tibio-tarsal articulation reaching the tip of the snout.

Tympanum two thirds the width of the eye; vomerine teeth in two slightly arched series 4. *longirostris*, p. 240.

Tympanum two thirds the width of the eye; vomerine teeth in a long scarcely interrupted series 5. *gracilis*, p. 241.

Tympanum nearly as large as the eye; vomerine teeth in two arched series . . . 6. *fragilis*, p. 241.

Two glandular folds on each side of the back, the latter ending in a large flat gland on the groin 7. *labrosus*, p. 241.



b. Tibio-tarsal articulation not reaching beyond the nostril.

a. Tympanum at least two thirds the width of the eye.

Snout rounded 8. *pentadactylus*, p. 241.

Snout rather prominent; hind limbs regularly cross-barred 11. *mystacinus*, p. 244.

Snout acuminate, prominent; back with longitudinal folds 15. *typhonius*, p. 246.

β. Tympanum not two thirds the width of the eye.

Snout rounded 9. *rubido*, p. 243.

Snout acuminate; tibio-tarsal articulation reaching beyond the eye 10. *pæcilochilus*, p. 243.

Snout a little projecting; tibio-tarsal articulation reaching in front of the eye; no glandular lateral fold 13. *perlævis*, p. 245.

Snout prominent; tibio-tarsal articulation not reaching beyond the eye 14. *albilabris*, p. 245.

γ. Tympanum not half the width of the eye.

No glandular lateral fold 12. *microtis*, p. 244.

II. Toes with distinct dermal margins.

1. No membranaceous fold along the tarsus.

Back with longitudinal folds 16. *ocellatus*, p. 247.

No longitudinal folds on the back 17. *caliginosus*, p. 247.

2. A membranaceous fold along the inner side of the tarsus.

Inner metatarsal tubercle spur-like 18. *podicipinus*, p. 248.

Inner metatarsal tubercle oval 19. *gaudichaudii*, p. 249.

1. *Leptodactylus pustulatus*.

Entomoglossus pustulatus, *Peters, Mon. Berl. Ac.* 1870, p. 647.

Tongue heart-shaped. Vomerine teeth in two short series behind the choanæ. Snout rounded; tympanum half the width of the eye. Fingers and toes moderate, pointed, the latter not fringed; first finger a little longer than second. Skin finely wrinkled above. Brown, indistinctly banded longitudinally; beneath with numerous small yellowish-white spots.

Ceara, N. Brazil.

2. *Leptodactylus rhodonotus*.

Cystignathus rhodonotus, *Günth. Proc. Zool. Soc.* 1868, p. 481, pl. 37. f. 1.

Tongue heart-shaped. Vomerine teeth in two slightly curved series behind the choanæ. Snout rounded, slightly longer than the greatest orbital diameter; nostril nearer the tip of the snout than the eye; interorbital space as broad as the upper eyelid; tympanum two thirds the width of the eye. Fingers moderate, first longer

than second; toes moderate, not fringed; subarticular tubercles well developed; two small metatarsal tubercles. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches in front of the tympanum. Skin smooth; no ventral discoidal fold. Brown above; a broad rose-coloured band occupies the whole back from the nostril to the sacrum; limbs with blackish cross bars; lower parts greyish, white-spotted.

Peru.

a. Hgr. ? Chyavetas, E. Peru. Mr. E. Bartlett [C.]. (Type.)

3. *Leptodactylus hylædactylus*.

Cystignathus hylædactylus, Cope, *Proc. Ac. Philad.* 1868, p. 115.

Tongue oval, slightly nicked behind. Vomerine teeth in two slightly arched series behind the choanæ. Snout ovate; nostril nearer the tip of the snout than the eye; interorbital space broader than the upper eyelid; tympanum two thirds the width of the eye. Fingers moderate, first not extending beyond second; toes moderate, not fringed, with distinctly dilated tips; subarticular tubercles strong; two minute metatarsal tubercles. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the eye. Skin of upper surfaces granular; a vertebral and dorso-lateral dermal fold, the latter frequently interrupted; a row of elongate warts on each side; a ventral discoidal fold. Brown above, indistinctly marbled with darker; a dark band between the eyes; hind limbs cross-barred; hinder side of thighs dark brown, marbled with white.

E. S. America.

a-b. ♀. Demerara Falls.

4. *Leptodactylus longirostris*. (PLATE XVI. fig. 3.)

Tongue oval, nicked behind. Vomerine teeth in two slightly arched series behind the choanæ. Snout acuminate, much longer than the greatest orbital diameter; nostril a little nearer the tip of the snout than the eye; interorbital space narrower than the upper eyelid; tympanum two thirds the width of the eye. Fingers moderate, first much longer than second; toes slender, not fringed; subarticular tubercles much developed; a small inner, and a very small, rather indistinct, outer metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the tip of the snout. Skin with a few flat warts above; a glandular lateral fold; a ventral discoidal fold. Brown above, with rather indistinct darker spots; a dark angular spot between the eyes; a blackish-brown streak along the upper lip, the canthus rostralis, and round the tympanum; legs cross-barred; hinder side of thighs with a dark brown network; beneath immaculate.

Brazil.

a-b. ♀. Santarem. Mr. Wickham [C.].

x. { Leptodactylus discodactylus, Blgr.
♀ Yarimaguas Hahnel. (Type).

- a. Several, spec. ♂ & ♀. Rio Grande do Sul. Theresopolis
b-c. ♀. S. Lorenzo. R. Grande do Sul.
d. Nov. Theresopolis, Sta. Catharina. Fruhstorfer

5. *Leptodactylus gracilis*.

Cystignathus gracilis, *Dum. & Bibr.* p. 406; *D'Orb. Voy. Amer. mér.*, *Rept.* p. 10, pl. 13. f. 5-7. *Bussel, Arch. Nat.* 1864, p. 130.

Leptodactylus gracilis, *Espada, Viaj. Pacif., Vertebr.* p. 44.

Tongue subcordiform. Vomerine teeth in a long, scarcely interrupted series behind the choanæ. Snout pointed; tympanum two thirds the width of the eye. Hind limbs and toes very slender; the latter not fringed; two metatarsal tubercles. Brownish above, longitudinally striped with black; hind limbs cross-barred.

Montevideo.

6. *Leptodactylus fragilis*.

Cystignathus fragilis, *Brocchi, Bull. Soc. Philom.* (7) i. p. 182.

— *gracilis*, *Cope, Proc. Amer. Philos. Soc.* xviii. 1879, p. 269.

Leptodactylus fragilis, *Brocchi, Miss. Sc. Mex., Batr.* p. 19, pl. 5. f. 2.

Tongue oblong, slightly nicked behind. Vomerine teeth in two arched series behind the choanæ. Tympanum nearly as large as the eye. Limbs and toes very slender; subarticular tubercles much developed; two metatarsal tubercles. Flanks with two series of small tubercles, and a small glandular fold between them. Brownish above, with rather regular black spots; two triangular spots between the eyes; a black stripe from the tip of the snout to the eye; hind limbs cross-barred.

Tehuantepec.

7. *Leptodactylus labrosus*.

Leptodactylus labrosus, *Espada, Viaj. Pacif., Vertebr.* p. 36.

Tongue oval, slightly nicked behind. Vomerine teeth in two arched series behind the choanæ. Snout pointed, very prominent. First finger longer than second; toes not fringed; subarticular tubercles well developed; two small metatarsal tubercles. The hind limb being carried forwards along the body, the tarso-metatarsal articulation reaches the tip of the snout. Two glandular lateral folds on each side of the back, the lower ending in a large, irregular, flat porous gland on the groin: a fold from the eye to the shoulder; sides of body and upper eyelids tubercular; a ventral discoidal fold. Brown above; a dark streak from the tip of the snout through the eye to the shoulder; upper lip with dark triangular spots; a dark triangular spot between the eyes; limbs cross-barred.

Ecuador.

8. *Leptodactylus pentadactylus*.

Cystignathus fuscus, *Günth. Cat.* p. 28.

Pleurodema labyrinthicum, *Günth. l. c.* p. 31.

Seba, i. pl. 75. f. 1.

Rana pentadactyla, *Laur. Syn. Rept.* p. 32.

— *ocellata*, *Schneid. Hist. Amph.* i. p. 117; *Daud. Rein.* p. 61, pl. 19, and *Rept.* viii. p. 118; *Gravenh. Delic.* p. 42.

— *gigas*, *Spic. Ran.* p. 25, pl. 1; *Peters, Mon. Berl. Ac.* 1872, p. 197.

— *labyrinthica*, *Spic. l. c.* p. 31, pl. 7. f. 1, 2; *Peters, l. c.*

Cystignathus pachypus, part., *Wagl. Syst.* p. 203.

— *ocellatus*, part., *Tschudi, Batr.* p. 98; *Dum. & Bibr.* p. 396.

— *labyrinthicus*, *Dum. & Bibr.* p. 407; *Guichen. in Casteln. Amér. Sud, Rept.* p. 78, pl. 16; *Reinh. & Lüttk. Vidensk. Meddel.* 1861, p. 165; *Steindachner, Novara, Amph.* p. 23, pl. 5. f. 5.

Guathophysa labyrinthica, *Cope, Nat. Hist. Rev.* 1865, p. 112.

— *ocellata*, *Cope, Journ. Ac. Philad.* (2) vi. p. 73.

— *gigas*, *Cope, l. c.*

Cystignathus pentadactylus, *Peters, Mon. Berl. Ac.* 1872, p. 198.

Leptodactylus goliath, *Espada, Viaj. Pacif., Vertebr.* p. 57.

? *Leptodactylus stenodema*, *Espada, l. c.* p. 64.

Cystignathus ocellatus, *De Betta, Atti Inst. Venet.* ii. (5) 1876.

Tongue oval, slightly nicked behind. Vomerine teeth in two arched series behind the choanæ. Snout rounded, longer than the greatest orbital diameter; nostril a little nearer the tip of the snout than the eye; interorbital space narrower than the upper eyelid; tympanum two thirds or three fourths the width of the eye. Fingers moderate, first much longer than second; toes moderate, not fringed; subarticular tubercles moderate; a small oval inner, and a rather indistinct rounded outer metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches hardly the eye. Skin smooth above, generally with large flat glands on the flanks; a glandular fold from the eye above the tympanum to the shoulder, and generally another along each side of the back to the sacral region: a more or less distinct abdominal discoidal fold. Brownish above, with dark spots generally arranged in transverse bars on the back; a black stripe along the canthus rostralis and the temporal fold; limbs cross-barred; hinder side of thighs black and yellowish marbled. Male with an internal sub-gular vocal sac, and a strong conical tubercle on the inner side of the first digit, and another, bi- or tricuspid one on each side of the breast; these tubercles covered, during the breeding-season, with a black horny sheath.

S. America. *W. Indies.*

<i>a.</i> ♂.	Dominica.	Mus. Guilding.
<i>b.</i> ♂.	Demerara.	Col. E. Sabine [P.].
<i>c-f, g-k.</i> ♂ ♀.	Demerara Falls.	
<i>l.</i> ♂.	Surinam.	
<i>m.</i> ♂, stuffed.	Para.	
<i>n.</i> ♀.	Garanhuus, Pernambuco.	W. A. Forbes, Esq. [P.].
<i>o, p.</i> ♂.	Pernambuco.	J. P. G. Smith, Esq. [P.].
<i>q.</i> ♂.	Bahia.	Dr. Wucherer [C.].
<i>r.</i> Skeleton.	Bahia.	
<i>s-t.</i> ♂ ♀.	Brazil.	Leyden Museum.
<i>u, v.</i> Skeletons.	Brazil.	
<i>w-x.</i> Young.	Sarayacu, Ecuador.	Mr. Buckley [C.].
<i>y, z, a, β.</i> ♂ ♀, stuffed.	S. America.	
<i>γ.</i> ♀, stuffed.	S. America.	Haslar Collection.
<i>δ.</i> ♀, stuffed.	S. America.	Gen. Hardwicke [P.].
<i>ε-ζ.</i> ♂ ♀.	— ?	

7-0.	Yg.	Macassena, Brit. Guiana.	Slater.
-v	♂♀	Dominica.	Ramago.
-o	♀ & ygs.	S. Lucia	"
-	♀	Sta. Cruz, Matto Grosso.	Moore.
6	Yg.	S. Paulo.	Shering

a-b. Egg. Yarimaquas. Hahnel.

b-c. Egg. Yarimaquas. Hahnel. (Type)

a-b. *Leptodactylus xiphetes*, Boettg.
Eg. Paraguay. Linde

9. *Leptodactylus rubido*.

Gnathophysa rubido, Cope, *Proc. Ac. Philad.* 1874, p. 128.

Tongue oval, slightly nicked behind. Vomerine teeth in two short arched series behind the choanæ. Snout short, rounded; tympanum scarcely more than half the width of the eye. Toes not fringed. The hind limb being carried forwards along the body, the tibio-tarsal articulation falls short to the orbit. Dorsal surface smooth, pustular between the ilia; a glandular lateral fold from the eye to near the groin; another, just below it, extending to the middle of the side; a lateral glandular mass extending from near the axilla to the groin, and occupying the width of the side. Reddish brown or bright red above; a narrow black bar from nostril to tympanum; upper lip broadly black-bordered; hind limbs black, cross-barred; hinder side of thighs faintly pale marbled; a few black spots on the groin; inferior surfaces dark brown, with numerous pale dots, which may be wanting on the gular region, and inosculate on the femur. Male with two spur-like tubercles on the inner side of the first digit: another, tricuspid, on each side of the breast.

Allied to *L. pentadactylus*, but much smaller.

Moyabamba, Peru.

Leptodactylus rhodomystax, Blgr.

The following specimen, though differing in some respects from the above diagnosis, must, I think, be referred to this species. The differences are:—The tympanum is two thirds the diameter of the eye; there is no second fold below the dorso-lateral, and the lateral glandular mass is much smaller, and rendered besides rather indistinct by the smooth state of the specimen. The coloration is very handsome. The hind part of the head and the back between the lateral folds vinaceous red; a dark-brown bar between the eyes; the space between the canthal and labial streaks beautiful rose; the hind limbs blackish brown, the hinder side of the thighs and the inner side of the calves with regular round white spots: lower surfaces brown, white-spotted.

a. ♀.

Canelos, Ecuador.

Mr. Buckley [C].

10. *Leptodactylus pæcilochilus*.

Rana pachypus, juv., *Spix, Test. Ran.* pl. 3. f. 1

Cystignathus pæcilochilus, Cope, *Proc. Ac. Philad.* 1862, p. 156.

Tongue oval, nicked behind. Vomerine teeth in two arched series behind the choanæ. Snout acuminate, moderately prominent, longer than the greatest orbital diameter; nostril a little nearer the tip of the snout than the eye; interorbital space as broad as the upper eyelid; tympanum nearly two thirds the width of the eye. Fingers moderate, first much longer than second; toes moderate, not fringed; subarticular tubercles much developed; two metatarsal tubercles, the outer sometimes indistinct. The

hind limb being carried forwards along the body, the tibio-tarsal articulation reaches between the eye and the nostril. Skin smooth, a narrow glandular lateral fold from the eye to the groin; a ventral disk. Brown above, immaculate or with dark regular spots; a light-edged crescent-shaped band between the eyes; a dark-brown stripe along the canthus rostralis and on the temporal region; limbs cross-barred; hinder side of thighs dark brown, with a more or less distinct longitudinal white stripe. Male with internal vocal sacs; thumb without spine-bearing tubercles.

E. S. America.

a-b. ♂ ♀.
c-d, e. ♂ ♀.
f. ♀.

Demerara Falls.
Surinam.
Interior of Brazil.

Hr. A. Kappler [C.].

11. *Leptodactylus mystacinus*.

Cystignathus schomburgkii, *Günth. Cat.* p. 29.

Cystignathus mystacinus, *Burmeister, Reise La Plata*, ii. p. 532.

— *mystaceus*, *Hensel, Arch. f. Naturg.* 1867, p. 125.

Leptodactylus wuchereri, *Espada, Viaj. Pacif., Vertebr.* p. 68.

Tongue oval, indistinctly nicked behind. Vomerine teeth in two slightly arched series behind the choanæ. Snout rounded, slightly prominent, longer than the greatest orbital diameter; nostril nearer the tip of the snout than the eye; interorbital space narrower than the upper eyelid; tympanum two thirds the width of the eye. Fingers moderate, first longer than second; toes moderate, not distinctly fringed; subarticular tubercles moderate; two small metatarsal tubercles. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the tympanum. Skin smooth, distinctly porous on the back and on the upper surface of the thighs, calves, and tarsi; sides with large oval or rounded glandules; a fold above the tympanum; a ventral discoidal fold. Brown or olive above; upper lip dark brown; a dark-brown stripe from the tip of the snout along the canthus rostralis through the eye to the tympanum; another dark-brown stripe on each side of the back; a few blackish spots on the flanks and on the hind part of the back; hind limbs regularly cross-barred. Male without external vocal sacs.

E. S. America.

a. ♀.
b. ♀.
c. Hgr.

Parana.
Brazil.
Soriano, Uruguay.

Berlin Museum.
Leyden Museum.
— Havers, Esq. [P.].

12. *Leptodactylus microtis*.

Cystignathus microtis, *Cope, Proc. Amer. Philos. Soc.* xviii. 1879, p. 265.

Vomerine teeth in two short series behind the choanæ. Snout not elongate, without canthus rostralis; tympanum two fifths the

~~A. 4g. Colon. Resistencia. Spegazzini.~~

Leptodactylus bufonius. Blys.
d. ♀ sys. Asuncion, Paraguay. Bohls.
f. ♂♀ Salta, W. Argentina. Turin Mus.

a-f. ♂♀	Rio Grande do Sul.	Ihering.
g. h. ♀	"	"
i. yg.	Pernambuco.	Ridley.

width of the eye. Toes without dermal margins. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the posterior border of the orbit. Dorsal skin without glandular folds; an abdominal discoidal fold. Colour above dark brown, with a blackish pale-edged triangle between the eyes, with its apex directed posteriorly: a dark light-edged spot below the front of the orbit: tympanum and a streak behind it blackish.

Guanajuato, Mexico.

13. *Leptodactylus perlævis*.

Cystignathus perlævis, Cope, *Proc. Amer. Philos. Soc.* xviii. 1879, p. 269.

Tongue a longitudinal oval, entire. Vomerine teeth in two short transverse series behind the choanæ. Snout a little projecting, with distinct canthus rostralis, the nostrils about one third the distance from its apex to the orbit; tympanum not quite two thirds the width of the eye. First finger a little longer than second; foot slender; plantar tubercles insignificant. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches in front of the eye. Skin exceedingly smooth and shining, without glandular folds; an abdominal discoidal fold. Dark ashy grey above; sides blackish above, speckled with white and blackish above; an interorbital dark spot; upper lip marbled; posterior face of femora dark, with light specks; posterior limbs obscurely cross-banded.

Tehuantepec.

14. *Leptodactylus albilabris*. (PLATE XVI. fig. 4.)

Cystignathus albilabris, Günth. *Ann. & Mag. N. H.* (3) iv. p. 217; Reinh. & Lütke. *Vidensk. Meddel.* 1862, p. 205.

— *caliginosus*, Brocchi, *Bull. Soc. Philom.* (7) i. p. 180.

— *labialis*, Cope, *Proc. Amer. Philos. Soc.* xvii. p. 90. and xviii. p. 269.

Leptodactylus caliginosus, Brocchi, *Miss. Sc. Mex., Batr.* p. 87, pl. 5. f. 1.

— *labialis*, Brocchi, *l. c.* p. 20.

— *albilabris*, Boulenger, *Bull. Soc. Zool. France*, 1881, p. 33.

Tongue oval, slightly nicked behind. Vomerine teeth in two slightly curved series behind the choanæ. Snout subacuminate, with prominent upper lip, a little longer than the greatest orbital diameter; nostril a little nearer the tip of the snout than the eye; interorbital space not much narrower than the upper eyelid; tympanum not quite two thirds the width of the eye. Fingers moderate, first longer than second; toes moderate, not fringed; subarticular tubercles well developed; sole with regular series of small tubercles corresponding with the metatarsals; two small metatarsal tubercles. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the eye, or not quite so far.

Skin smooth, or with small warts above; a glandular lateral fold from the eye to the groin; sometimes a second below it, from the tympanum to the middle of the side; a ventral discoidal fold. Brown or olive above, with more or less distinct darker markings; generally an angular dark spot on the occiput; a dark stripe from the tip of the snout along the canthus rostralis through the eye to the shoulder; limbs cross-barred; hinder side of thighs dark brown, with a more or less distinct white stripe; beneath immaculate, or more or less dotted with brown. Male with two internal vocal sacs; thumb without spine-like tubercles.

W. Indies; Mexico.

<i>a-c, d-g, h-l.</i> ♂, ♀, & yg.	St. Thomas.	Mr. Riise [C.]. (Types.)
<i>m.</i> Several spec.: ♂, ♀, hgr., & yg.	Sta. Cruz, W. Indies.	A. Newton, Esq. [P.].
<i>n.</i> ♀.	Tehuantepec.	Brussels Museum [E.].
<i>o.</i> ♂.	—?	

15. *Leptodactylus typhonius*.

Cystignathus gracilis, Günth. Cat. p. 28.

Rana typhonia, Daud. *Rain.* p. 55, pl. 17. f. 3, 4, and *Rept.* viii. p. 106, pl. 95.

— *mystacea*, Spix, *Test. Ran.* p. 27, pl. 3. f. 2, 3; *Peters, Mon. Berl. Ac.* 1872, p. 201.

— *sibilatrix*, Wied, *Beitr. Naturg. Bras.* i. p. 545, and *Abbild.*

Leptodactylus typhonius, Fitzing. *Class. Rept.* p. 64.

— *sibilatrix*, Fitzing. *l. c.*

Cystignathus ocellatus, part., Tschudi, *Batr.* p. 78.

— *typhonius*, Dum. & Bibr. p. 402; *Reinh. & Lütik. Vidensk. Meddel.* 1861, p. 164; *Steindachn. Novara, Amph.* p. 24; *Peters, Mon. Berl. Ac.* 1876, p. 709.

— *schomburgkii*, Troschel, *Schomb. Reisen Guiana*, iii. p. 659.

— *gracilis*, Hensel, *Wiegman. Arch.* 1867, p. 130.

Tongue oval, nicked behind. Vomerine teeth in two arched series behind the choanæ. Snout acuminate, prominent, longer than the greatest orbital diameter; nostril nearer the tip of the snout than the eye; interorbital space narrower than the upper eyelid; tympanum two thirds the width of the eye. Fingers moderate, first much longer than second; toes moderate, not fringed: subarticular tubercles well developed; two small metatarsal tubercles, the outer very indistinct. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the eye, or somewhat beyond. Skin with distinct longitudinal folds on the back; a ventral discoidal fold. Olive above, with dark regular spots; sometimes a light vertebral stripe; limbs cross-barred; hinder side of thighs black-and-white marbled. Male with a black external vocal sac on each side of the throat; thumb without spine-bearing tubercles.

E. S. America.

<i>a.</i> ♀.	St. Marthe.	
<i>b-d.</i> ♂.	Para,	R. Graham, Esq. [P.].

fr. yg. Panama. H. & Ill.
 g. Several species, last state. (Young). P. guianensis.

Leptodaetylus prognathus, Bler.
 v. Agr. ♂ Rio grande do Sul. Shering.
 (Type).
 e. Agr. & y. Col. Resistencia, Argentine. Spezzini
 Salta, W. Argentina Surin Mus
 ♀ Montevideo
 ♂ ♀ "

♂ Trinidad. Hart.
 h. ♂ ♀ Emerara. " "
 k. ♂ & y. Trinidad. Hart.

s. f. Colow. Resistencia. Spegazzini.
t. u. ♂ ♀ Atuncio, Paraguay. Bohls.

16. *Leptodactylus ocellatus*.

- Cystignathus ocellatus*, *Günth. Cat.* p. 27.
Rana ocellata, *Linn. Mus. Ad. Frid.* ii. p. 39.
 — *pachypus*, *Spir. Test. Ran.* p. 26, pl. 2; *Wied. Beitr. Nat. Bras.* i. p. 540.
 — *pygmæa*, *Spir. l. c.* p. 30, pl. 6. f. 2.
Cystignathus pachypus, *Wagl. Syst.* p. 202, and *Deser. et Icon. Amph.* pl. 21.
 — *ocellatus*, part., *Dum. & Bibr.* p. 396.
 — *ocellatus*, *Guichen. in Casteln. Amér. mérid., Rept.* p. 78; *Reinh. & Lütk. Vidensk. Meddel.* 1861, p. 163; *Hensel, Arch. f. Naturg.* 1867, p. 123; *Peters, Mon. Berl. Ac.* 1872, p. 199.
Leptodactylus ocellatus, *Gir. Proc. Ac. Philad.* 1853, p. 420, and *U.S. Expl. Exp., Herp.* p. 29, pl. 3. f. 1-6.
 — *serialis*, *Gir. l. c.* p. 421.
Cystignathus caliginosus, *Burm. Reise La Plata*, ii. p. 532.
Leptodactylus pachypus, *Espada, Viaj. Pacif., Vert.* p. 48.
 ? *Leptodactylus latinasus*, *Espada, l. c.* p. 40.

Tongue oval, slightly nicked behind. Vomerine teeth in two arched series behind the choanæ. Snout rounded, longer than the greatest orbital diameter; nostril nearer the tip of the snout than the eye; interorbital space as broad as or narrower than the upper eyelid; tympanum very distinct, three fourths the width of the eye. Fingers moderate, first much longer than second; toes moderate, fringed on each side; subarticular tubercles moderate; a blunt inner metatarsal tubercle, and a very small outer one. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the eye. Skin with distinct longitudinal glandular folds above; quite smooth beneath; a more or less distinct ventral discoidal fold. Olive or brownish above, with regular darker rounded or subquadrangular spots; a large one between the eyes. Male with an internal subgular vocal sac, and two strong tubercles on the inner side of the first digit.

E. S. America.

<i>a-c.</i> Hgr. & yg.	Para.	R. Graham, Esq. [P.].
<i>d-g.</i> ♂, ♀, & yg.	Bahia.	
<i>h.</i> Several spec., ♂ & yg.	Rio Janeiro.	C. Darwin, Esq. [P.].
<i>i.</i> Hgr.	Rio Janeiro.	
<i>k-m, n-o.</i> ♂, ♀, & hgr.	Brazil.	
<i>p-q, r.</i> ♂, ♀, & yg.	Buenos Ayres.	E. W. White, Esq. [C.].

17. *Leptodactylus caliginosus*.

- Cystignathus caliginosus*, *Günth. Cat.* p. 28.
Leptodactylus caliginosus, *Girard, Proc. Ac. Philad.* 1853, p. 422, and *U.S. Expl. Exped., Herp.* p. 31; *Bouleng. Bull. Soc. Zool. France*, 1881, p. 30.
Cystignathus melanonotus, *Hallow. Proc. Ac. Philad.* 1860, p. 480; *Cope, Proc. Amer. Philos. Soc.* xviii. p. 269.
Platymantis petersii, *Steindachn. Verh. zool.-bot. Ges. Wien*, 1864, p. 254, pl. 16. f. 2.

Cystignathus ocellatus, *Steindachn. l. c.* pl. 11. f. 1.

— *echinatus*, *Brocchi, Bull. Soc. Philom.* (7) i. p. 181.

Leptodactylus echinatus, *Brocchi, Miss. Sc. Mex., Batr.* p. 18, pl. 5. f. 4.

— *melanonotus*, *Brocchi, l. c.* p. 20.

Tongue oval, nicked behind. Vomerine teeth in two slightly curved series behind the choanæ. Snout rounded, slightly longer than the greatest orbital diameter; nostril nearer the tip of the snout than the eye; interorbital space as broad as or a little narrower than the upper eyelid; tympanum two thirds the width of the eye. Fingers moderate, first extending slightly beyond second; toes moderate, very conspicuously fringed; subarticular tubercles well developed; two small metatarsal tubercles. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the eye, or a little beyond. Skin smooth, with a few scattered small warts above; a ventral discoidal fold. Brownish or olive above, with indistinct darker markings; a large angular spot on the occiput; hinder side of thighs marbled or reticulated with dark brown; beneath more or less spotted with brown or grey. Male with an internal vocal sac, and two spine-bearing tubercles on the inner side of the first digit.

Tropical America.

<i>a.</i> ♀.	Tehuantepec.	
<i>b-c.</i> Young.	Mexico.	P. Geddes, Esq. [C.].
<i>d-f.</i> ♂ ♀.	Sarayacu, Ecuador.	Mr. Buckley [C.].
<i>g-i.</i> ♂.	Moyobamba.	Mr. A. H. Roff [C.].
<i>k.</i> ♀.	Pernambuco.	W. A. Forbes, Esq. [P.].
<i>l.</i> ♀.	Bahia.	Dr. O. Wucherer.
<i>m-o, p-r.</i> ♂ ♀.	S. America.	Mus. Guilding.

18. *Leptodactylus podicipinus*. = 17.

Cystignathus podicipinus, *Cope, Proc. Ac. Philad.* 1862, p. 156.

Tongue oval, subemarginate. Vomerine teeth in two short separate rows behind the choanæ. Snout rounded, a little prominent; tympanum half the size of the eye. First finger longer than second; toes with margins as wide as a phalanx, which unite at their bases, forming a slight web; a tarsal fold continuous with that of the internal digit, except where interrupted by a spur-like tubercle. Skin smooth, except a few minute warts on the coccygeal region. Above brown: an elongate, darker, triangular spot between the eyes; a yellowish line extends beneath the eye to the angle of the mouth; femora indistinctly banded, posteriorly marbled with blackish; tibiae with three brown bands; beneath yellowish brown, with numerous yellow spots.

Paraguay.

This species is perhaps not specifically distinct from the next.

♂. ♂♀.	St. Vincent. t.	Mus. Comp. Zool.
	(Types of <u>L. validus</u> , form.)	
♀	Trinidad.	Hart.
w. ♂	Demerara.	Smith.
♀. ♂♀	St. Vincent.	Smith.
Several spec.,		
♀, yg., & larva.		
Several spec., ♂♀.	Asuncion, Paraguay.	Bohls.

C. 9
d. Th. i. ♂ ♀

Sta Catharina.
Theresopolis

Michaelis.
Göldi

19. *Leptodactylus gaudichaudii*.

? *Limnocharis fuscus*, *Günth. Cat.* p. 23.

Crossodactylus gaudichaudii, *Günth. l. c.* p. 90.

Crossodactylus gaudichaudii, *Dum. & Bibr.* p. 90; *Hensel, Arch. f. Naturg.* 1867, p. 149; *Steindachn. Verh. zool.-bot. Ges. Wien*, 1865, p. 499.

? *Limnocharis fuscus*, *Bell, Zool. Beagle, Rept.* p. 33, pl. 16. f. 3.

Tarsopterus trachystomus, *Reinh. & Lütke. Vidensk. Meddel.* 1861, p. 177, pl. 3. f. 2.

Vomerine teeth none (sometimes present, according to Hensel). Tongue oval, entire. Snout rounded, as long as the greatest orbital diameter; nostril equally distant from the eye and the tip of the snout; interorbital space as broad as the upper eyelid; tympanum two thirds the width of the eye. Fingers moderate, with slightly swollen tips, first not extending beyond second; toes moderate, margined with a broad membrane, the tips dilated into small disks; a broad membranaceous fold along the inner edge of the tarsus; two very prominent metatarsal tubercles, the inner oval, the outer rounded; subarticular tubercles small. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the eye. Skin smooth or slightly glandular; a fold from the eye to the shoulder; no ventral discoidal fold. Olive above; limbs indistinctly cross-barred. Male without vocal sac, with two small spines on the inner side of the first digit.

Brazil.

a. ♂.	Lagoa Santa.	Prof. Reinhardt [P.]. (As typical of <i>Tarsopterus trachystomus</i> .)
? b. ♂, very bad state.	Rio Janeiro.	C. Darwin, Esq. [P.]. (Type of <i>Limnocharis fuscus</i> .)

14. *PLECTROMANTIS*.

Plectromantis, *Peters, Mon. Berl. Ac.* 1862, p. 232; *Cope, Journ. Ac. Philad.* (2) vi. 1866, p. 97.

Pupil horizontal. Tongue oval, slightly emarginate, and free behind. Vomerine teeth behind the choanæ. Tympanum distinct. Fingers and toes free, the tips of the latter, or of both, dilated into regular disks. Outer metatarsals united. Omosternum cartilaginous; xiphisternum with a bony style. Terminal phalanges T-shaped.

Western South America.

Future researches may prove this genus not to be separable from *Leptodactylus*.

1. *Plectromantis wagneri*.

Plectromantis wagneri, *Peters, l. c.*

Vomerine teeth in two arched series behind the choanæ. Snout rounded, rather prominent; nostril nearer the tip of the snout than the eye; tympanum four sevenths the diameter of the eye. Tips of fingers not dilated; first finger longer than second; toes with a narrow fringe on each side; two metatarsal tubercles, inner elongate, outer rounded. Skin smooth; a large elongate gland between the angle of the mouth and the shoulder, surmounted by another the superior and posterior limits of which are not so distinctly defined. Dark brown above, indistinctly spotted with darker; beneath dirty white, marbled with black. Male with two spine-bearing tubercles on the inner side of the first digit.

Andes of Ecuador.

2. *Plectromantis rhodostigma*.

Plectromantis rhodostigma, *Cope, Proc. Ac. Philad.* 1874, p. 127.

Vomerine teeth in two short curved series behind the choanæ. Snout truncate; tympanum smaller than the eye. Fingers and toes with well-marked dilatations, and without dermal margins. Heel of extended hind limb reaching the posterior border of the orbit. Skin smooth. Above uniform brown, below whitish; snout blackish to the orbits; femora dark brown behind; a rose-coloured spot in the groin, one on the superior face of the femur, two on the inferior face of the tibia, and one on the superior face of the tarsus.

Nauta, Upper Amazon.

15. LIMNOMEDUSA.

Cystignathus, sp., *Dum. & Bibr.* viii. p. 392.

Limnomedusa, *Cope, Journ. Ac. Philad.* (2) vi. 1866, p. 94.

Litopleura, *Espada, Viaj. Pacif., Vertebr.* p. 82.

Pupil erect. Tongue subcircular, free and slightly nicked behind. Vomerine teeth. Tympanum very distinct. Fingers free, toes nearly free, not dilated at the tips. Outer metatarsals united. Omosternum cartilaginous; sternum with a bony style. Terminal phalanges simple.

Uruguay.

1. *Limnomedusa macroglossa*.

Cystignathus macroglossus, *Dum. & Bibr.* p. 405.

Limnomedusa macroglossa, *Cope, l. c., and Proc. Amer. Philos. Soc.* xi. 1869, p. 168.

Litopleura maritimum, *Espada, l. c.*



Several.
b. ♀. eggs: Lorenzo, B. Grande & Sul. Shering

Vomerine teeth in two oblique oval groups on a level with the hinder edge of the choanæ. Snout subacuminate, as long as the greatest orbital diameter; interorbital space half the width of the upper eyelid; tympanum two thirds the diameter of the eye. First finger much longer than second; toes moderate, fringed, with a rudiment of web; subarticular tubercles well developed; a small oval inner, and an indistinct outer metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches beyond the tip of the snout. Upper surfaces covered with flat warts; lower surfaces smooth. Greyish olive above, marbled with darker; hind limbs cross-barred; groin and hinder side of thighs marbled with black. Male with a subgular vocal sac, and blackish rugosities on the inner side of the first, second, and third fingers.

Uruguay.

a. ♂.

Montevideo.

16. HYLORHINA.

Hylorhina, *Bell, Zool. Beagle, Rept.* p. 44; *Günth. Cat.* p. 23; *Cope, Nat. Hist. Rev.* 1865, p. 113, and *Journ. Ac. Philad.* (2) vi. 1866, p. 95.

Pupil erect. Tongue circular, free and entire behind. Vomerine teeth. Tympanum distinct. Fingers and toes very long, the former free, the latter webbed at the base; tips of fingers and toes not dilated. Outer metatarsals united. Omosternum cartilaginous; sternum with a broad bony style. Terminal phalanges simple.

Chili.

1. *Hylorhina silvatica*.

Hylorhina silvatica, *Günth. Cat.* p. 23.

Hylorhina sylvatica, *Bell, l. c.* pl. 19, f. 1; *Espada, Viaj. Pacif., Vertebr.* p. 10.

Cystignathus æneus, *Guichen. l. c.* pl. 5.

Vomerine teeth in a straight series on a level with the hinder edge of the choanæ. Snout short, rounded; interorbital space as broad as the upper eyelid; tympanum very small. Fingers very long, first shorter than second; toes very long, webbed at the base and slightly fringed; subarticular tubercles not much developed; a small, oval, inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the tip of the snout. Skin with small flat warts above, smooth beneath. Uniform brown (discoloured).

Chili.

a. ♀.

Chiloe.

(C. Darwin, Esq. [P.]. (Type.)

b-c. ♀ eggs. Valdivia. Fischer.

d. ♀. S. Chili. James.

17. BORBOROCÆTES.

- Cystignathus*, sp., *Dum. & Bibr.* viii. p. 407; *Günth. Cat.* p. 31.
Borborocætes, *Bell, Zool. Beagle, Rept.* p. 30; *Cope, Nat. Hist. Rev.*
 1865, p. 113.
Eusophus, *Cope, l. c., and Journ. Ac. Philad.* (2) vi. 1866, p. 95.
Borborocætes, sp., *Cope, Journ. Ac. Philad.* (2) vi. p. 94.
Cacotus, *Günth. Proc. Zool. Soc.* 1868, p. 482.
Phrynopus, *Peters, Mon. Berl. Ac.* 1873, p. 416.
Oreobates, *Espada, Ann. Soc. Esp.* i. p. 86.

Pupil horizontal. Tongue subcircular, entire or slightly nicked, and free behind. Vomerine teeth. Tympanum more or less distinct or absent. Fingers free; toes free or nearly so, the tips not dilated. Outer metatarsals united. Omosternum cartilaginous; sternum a cartilaginous plate. Terminal phalanges simple or slightly bifurcate.

W. S. America.

Synopsis of the Species.

I. A tympanum.

1. Vomerine teeth between the choanæ.

- | | |
|--|-------------------------------|
| Subarticular tubercles very strong | 1. <i>nodosus</i> , p. 253. |
| Subarticular tubercles moderate; vomerine teeth in two oblique series commencing on a level with the hinder edge of the choanæ; toes not fringed | 2. <i>roseus</i> , p. 253. |
| Subarticular tubercles moderate; toes fringed | 3. <i>hidalgoyi</i> , p. 253. |
| Subarticular tubercles small; fingers and toes slender | 4. <i>teniatus</i> , p. 254. |

2. Vomerine teeth behind the choanæ.

- | | |
|--|-------------------------------|
| First finger not longer than second; nostril nearer the tip of the snout than the eye. | 5. <i>grayi</i> , p. 254. |
| First finger not longer than second; nostril equally distant from the eye and the tip of the snout | 6. <i>bibronii</i> , p. 255. |
| First finger longer than second; nostril much nearer the tip of the snout than the eye | 7. <i>quixensis</i> , p. 255. |
| Habit very stout | 8. <i>peruanus</i> , p. 255. |

II. No tympanum.

- | | |
|---|---------------------------------|
| Snout as long as the greatest orbital diameter. | 9. <i>maculatus</i> , p. 256. |
| A conical tubercle on the tibio-tarsal articulation | 10. <i>calcaratus</i> , p. 256. |
| Snout shorter than the greatest orbital diameter | 11. <i>coppingeri</i> , p. 257. |



1. *Borborocætes nodosus*.

Cystignathus nodosus, *Dum. & Bibr.* p. 413; *Guichen. in Gay, Chile, Rept.* p. 98.

Eusophus nodosus, *Cope, Nat. Hist. Rev.* 1865, p. 113.

Tongue circular, slightly nicked behind. Vomerine teeth in two small groups between the choanae. Snout short, rounded; tympanum indistinct. Fingers and toes moderate; subarticular tubercles very strong; two small metatarsal tubercles. The hind limb being carried forwards along the body, the foot extends beyond the snout. Scattered small warts on the back; a rather indistinct parotoid gland above the tympanum to the shoulder. Brown above, dotted with black; limbs cross-barred; hinder side of thighs speckled with white; light brown beneath.

Chili.

2. *Borborocætes roseus*.

Cystignathus nodosus, *Günth. Cat.* p. 29.

Cystignathus roseus, *Günth. l. c.* p. 134.

Cystignathus roseus, *Dum. & Bibr.* p. 414; *Guichen. in Gay, Chile, Rept.* p. 99, pl. 7. f. 3; *Espada, Viaj. Pacif., Vertebr.* p. 73.

Borborocætes roseus, *Cope, Nat. Hist. Rev.* 1865, p. 113.

? *Cystignathus sylvestris*, *Tschudi, Faun. Per.* p. 66, pl. 11. f. 1; *Peters, Mon. Berl. Ac.* 1873, p. 623.

Tongue subcircular, entire. Vomerine teeth in two oblique series commencing on a level with the hinder edge of the choanae. Snout rounded, slightly longer than the greatest orbital diameter; nostril equally distant from the eye and the tip of the snout; interorbital space as broad as the upper eyelid; tympanum slightly distinct. Fingers moderate, first not extending beyond second; toes moderate, with a slight rudiment of web; subarticular tubercles not much developed; a small inner, and an indistinct outer metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the eye. Skin smooth, the upper surfaces distinctly porous. Brownish above, indistinctly marbled with darker; a light dorsal stripe.

Chili.

a. ♀.
b. Yg.

Chili.
S. America.

C. Darwin, Esq. [P].
C. Darwin, Esq. [P].

3. *Borborocætes hidalgi*.

Cystignathus hidalgoi, *Espada, Viaj. Pacif., Vertebr.* p. 76.

Tongue circular, nicked behind. Vomerine teeth in two nearly straight series between the choanae. Snout rounded; tympanum distinct, vertically elliptic, half the diameter of the eye. First finger as long as second; toes fringed, with a rudimentary web; subarticular tubercles moderate. The hind limb being carried forwards

along the body, the tarso-metatarsal articulation reaches the tip of the snout. Skin of upper surfaces glandular and porous, with small tubercles and more or less interrupted longitudinal glandular folds. Brown above, speckled with white on the sides and limbs.

Chili.

4. *Borborocœtes tæniatus*.

Cystignathus tæniatus, *Günth. Cat.* p. 29.

Cystignathus tæniatus, *Girard, Proc. Ac. Philad.* 1854, p. 226, and *U.S. Naval Astr. Exped.* ii. p. 207, pl. 34. f. 8-11; *Cunningh. Trans. Linn. Soc.* xxvii. p. 467.

Tongue subcircular, slightly nicked behind. Vomerine teeth in two small groups between the choanæ. Snout rounded, longer than the greatest orbital diameter; nostril a little nearer the tip of the snout than the eye; interorbital space broader than the upper eyelid; tympanum indistinct. Fingers long, slender, first shorter than second; toes long, slender, webbed at the base; tips of fingers and toes slightly swollen; subarticular tubercles small; two small metatarsal tubercles. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches between the eye and the tip of the snout. Skin smooth, or with slight, indistinct, longitudinal folds. Greenish, grey, or brown above, minutely speckled with dark brown; a dark streak along the canthus rostralis and on the temporal region; a more or less distinct one along each side of the back; a dark-brown inguinal spot.

Chili.

a-b. ♀.

Valdivia.

c. ♀.

Chiloe.

Dr. Cunningham [P.].

The following specimen, type of *Litoria glandulosa*, Bell, Zool. Beagle, p. 42, pl. 18. f. 4, probably belongs to this species, but, as already stated by Dr. Günther (Cat. p. 96), it is in too bad a condition to be properly determined.

d. ♀.

Concepcion.

C. Darwin, Esq. [P.].

5. *Borborocœtes grayi*.

Cystignathus grayii, *Günth. Cat.* p. 30.

Borborocœtes grayii, *Bell, Zool. Beagle, Rept.* p. 36, pl. 17. f. 2; *Guichen. in Gay, Chile, Rept.* p. 103.

Tongue cordiform, entire. Vomerine teeth in two short, slightly oblique series behind the choanæ. Snout rounded, slightly longer than the greatest orbital diameter; nostril nearer the tip of the snout than the eye; tympanum slightly distinct, half the diameter of the eye. Fingers moderate, first a little shorter than second; toes moderate, webbed at the base; subarticular tubercles rather indistinct; a small inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches between the eye and the tip of the snout. Skin smooth. Brown

Several spec. Valdivia. Fischer.
i. ♂ ♀ S. Chili. James.

b. ♀
c. Hgr.

Valdivia.
S. Chili.

Fischer.
James.

above (with white markings on the flanks and limbs [*Bell*]). Male with an internal vocal sac.

Valdivia.

a. ♂. Valdivia. C. Darwin, Esq. [P.]. (Type.)

6. *Borborocætes bibronii*.

Cystignathus libronii, *Günth. Cat.* p. 31.

Borborocætes bibronii, *Bell, Zool. Beagle, Rept.* p. 37, pl. 17. f. 1:

Guichen. in Gay, Chile, Rept. p. 105.

Tongue subcircular, entire. Vomerine teeth in two small groups behind the choanæ. Snout rounded, a little longer than the greatest orbital diameter; nostril equally distant from the eye and the tip of the snout; interorbital space broader than the upper eyelid; tympanum moderately distinct, hardly half the diameter of the eye. Fingers moderate, first not extending beyond second; toes moderate, webbed at the base; subarticular tubercles not much developed; a small inner metatarsal tubercle. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the tip of the snout. Skin smooth. Brownish above.

Valdivia and Chiloe.

a. ♀. Chonos. C. Darwin, Esq. [P.]. (Type.)

7. *Borborocætes quixensis*.

Oreobates quixensis, *Espada, An. Soc. Esp.* i. p. 86, and *Viaj. Pacif., Verteb.* p. 99, pl. 3. f. 5.

Tongue subcircular, indistinctly nicked behind. Vomerine teeth in two short straight series behind the choanæ. Snout rounded, longer than the greatest orbital diameter; nostril much nearer the tip of the snout than the eye; interorbital space as broad as the upper eyelid; tympanum very distinct, two thirds the diameter of the eye. Fingers moderate, first longer than second; toes moderate, not fringed; subarticular tubercles very strong; two very prominent metatarsal tubercles. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches between the eye and the tip of the snout. Upper surfaces with closely-set tubercles and small warts. Greyish above, indistinctly marbled with darker; upper lip with vertical brown stripes; limbs cross-barred; lower surfaces marbled with brown. Male without vocal sac.

Ecuador.

a-b. ♂ ♀. Canelos. Mr. Buckley [C.].
c-d. ♂. Sarayacu. Mr. Buckley [C.].

8. *Borborocætes peruanus*.

Phrynopus peruanus, *Peters, Mon. Berl. Ac.* 1873, p. 416, pl. 4. f. 2.

General appearance of *Paludicola marmorata*, but with shorter

extremities, and vomerine teeth in two oblique groups behind the choanæ. Tympanum distinct, very small. Skin slightly warty. Dark olive-brown above, marbled with darker; sometimes a light vertebral line; beneath light violet, marbled with black.

Maraynioc, Peru.

9. *Borborocœtes maculatus*.

? *Cystignathus nebulosus*, Girard, *U.S. Expl. Exped., Herp.* p. 33, pl. 3. f. 19-23.

Cacotus maculatus, Günth. *Proc. Zool. Soc.* 1868, p. 482, pl. 38. f. 5.

? *Eusophus nebulosus*, Cope, *Proc. Amer. Philos. Soc.* xi. 1869, p. 168.

Tongue slightly nicked behind. Vomerine teeth in two small transverse series between the choanæ. Snout rounded, as long as the greatest orbital diameter; nostril equally distant from the eye and the tip of the snout; interorbital space as broad as the upper eyelid; no tympanic disk. First finger not extending beyond second; toes quite free, slightly fringed; subarticular tubercles much developed; two metatarsal tubercles. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the hinder edge of the eye. Upper surfaces with very small smooth tubercles. Greenish olive above, marbled with brownish; a dark band across the forehead from one eye to the other; a black band along the canthus rostralis and from the eye to the arm-pit; limbs with black cross bands. Throat and abdomen whitish, marbled with blackish.

Chili.

a-b. ♀?

Chili.

(Types.)

10. *Borborocœtes calcaratus*. (PLATE XVII. fig. 1.)

Cacotus calcaratus, Günth. *Proc. Zool. Soc.* 1881, p. 19.

Tongue slightly nicked behind. Vomerine teeth in two oblique groups behind the choanæ. Snout rounded, as long as the greatest orbital diameter; nostril equally distant from the eye and the tip of the snout; interorbital space as broad as the upper eyelid; no tympanic disk. First finger not extending as far as second; toes free, slightly fringed; subarticular tubercles well developed; two small but very prominent metatarsal tubercles; a conical tubercle on the tibio-tarsal articulation. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches the eye. Upper surfaces with very minute tubercles; a V-shaped glandular ridge on the back. Pinkish brown above, indistinctly marked with darker; a brown streak below the canthus rostralis; another, broader, from the eye to the middle of the side; limbs cross-barred.

Chiloe.

a. Hgr.

Chiloe.

(Type.)

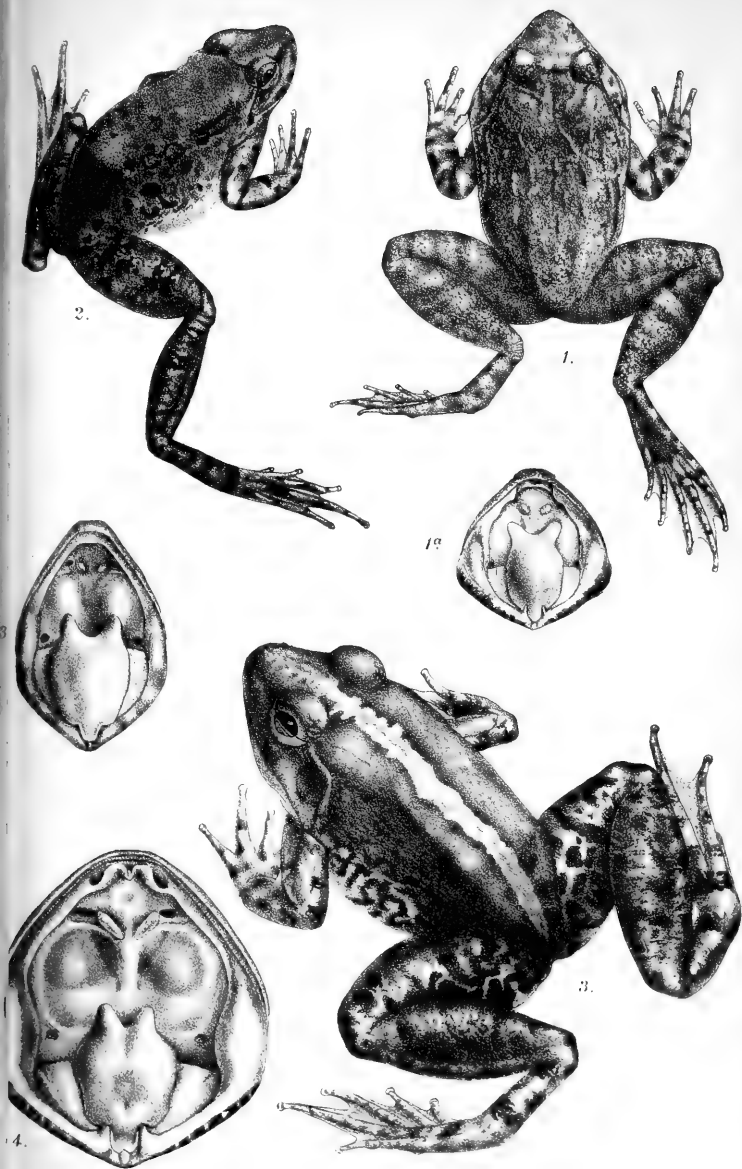


Valdivia.

Lischer.

Transferred from Hgr. 1881

2. ♀ Iquique, Peru. Christiania Mus.



1. *Rana laticeps*. 2. *Rana blanfordi*.
3. *Rana modesta*. 4. *Rana macrodon*.



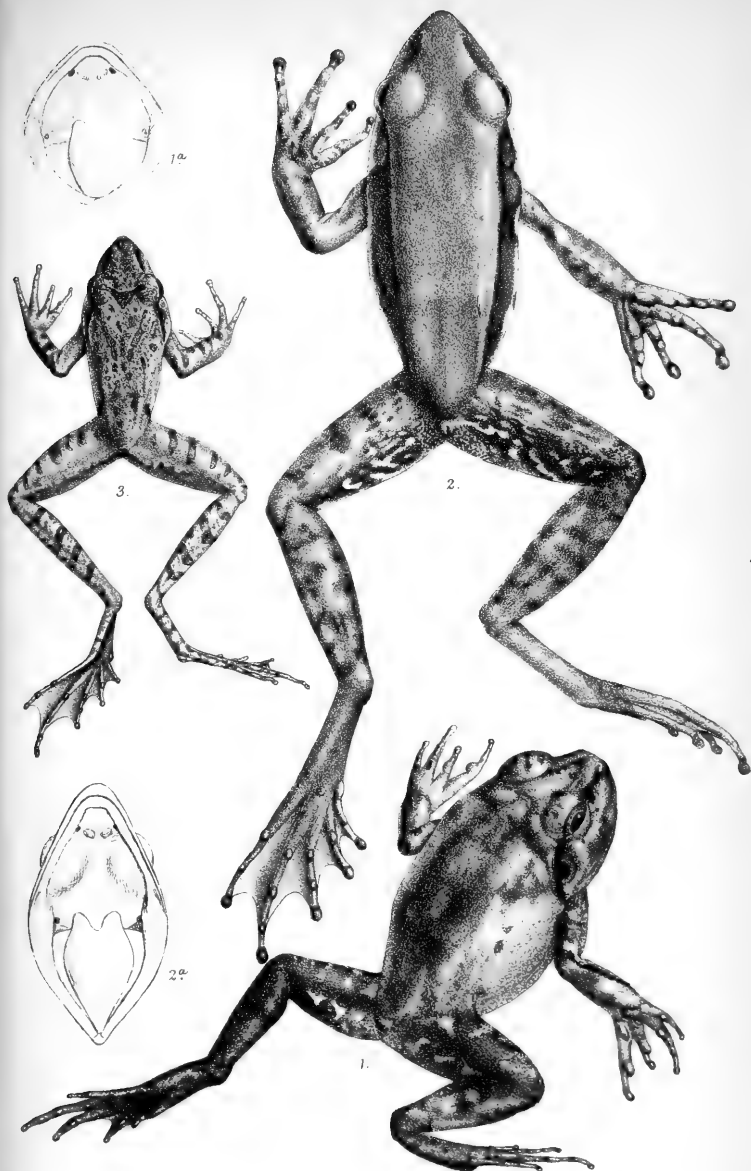


R. Mintern del .

Rana guttulata.

Mintern Pröb. imp.





R. Minter del

Minter Bros imp

1. *Rana dobsonii*. 2. *Rana krefftii*.
3. *Rana inguinalis*.



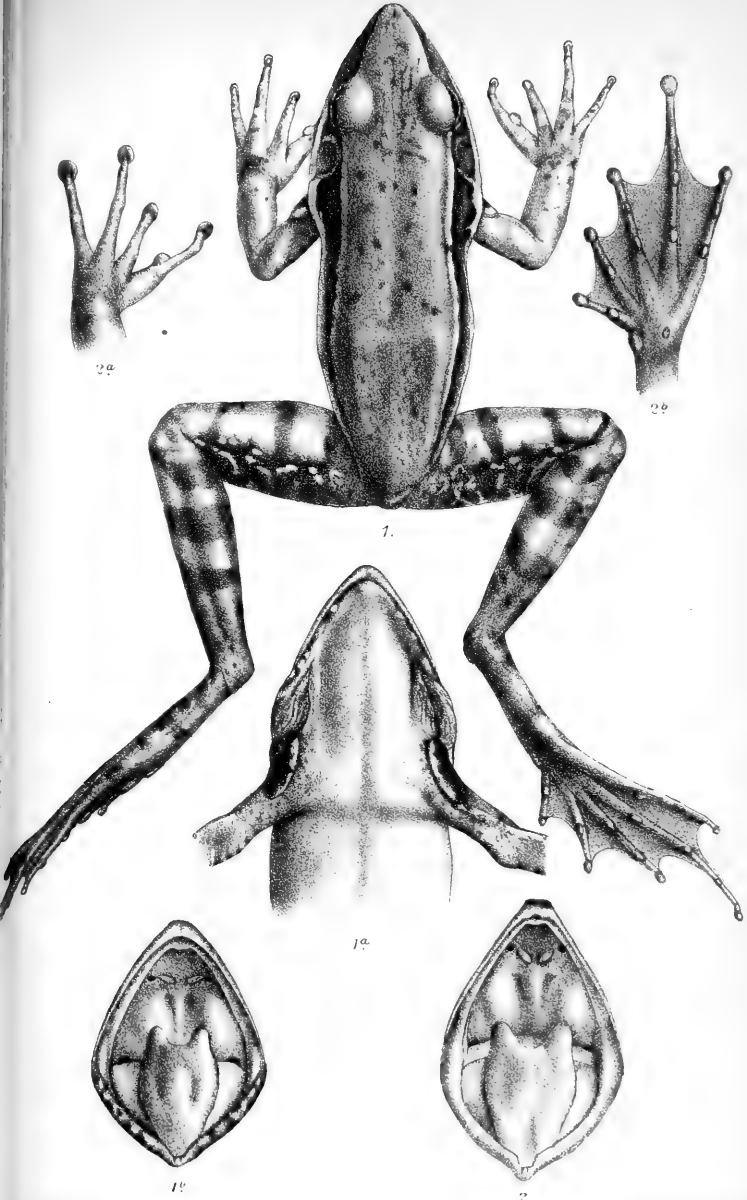


R. Mintern, del. et lith.

Mintern Bros imp.

1. *Rana verrucosa*. 2. *Rana güntneri*. 3. *Rana semipalmata*.





R. Mintern del

Mintern Bros. imp

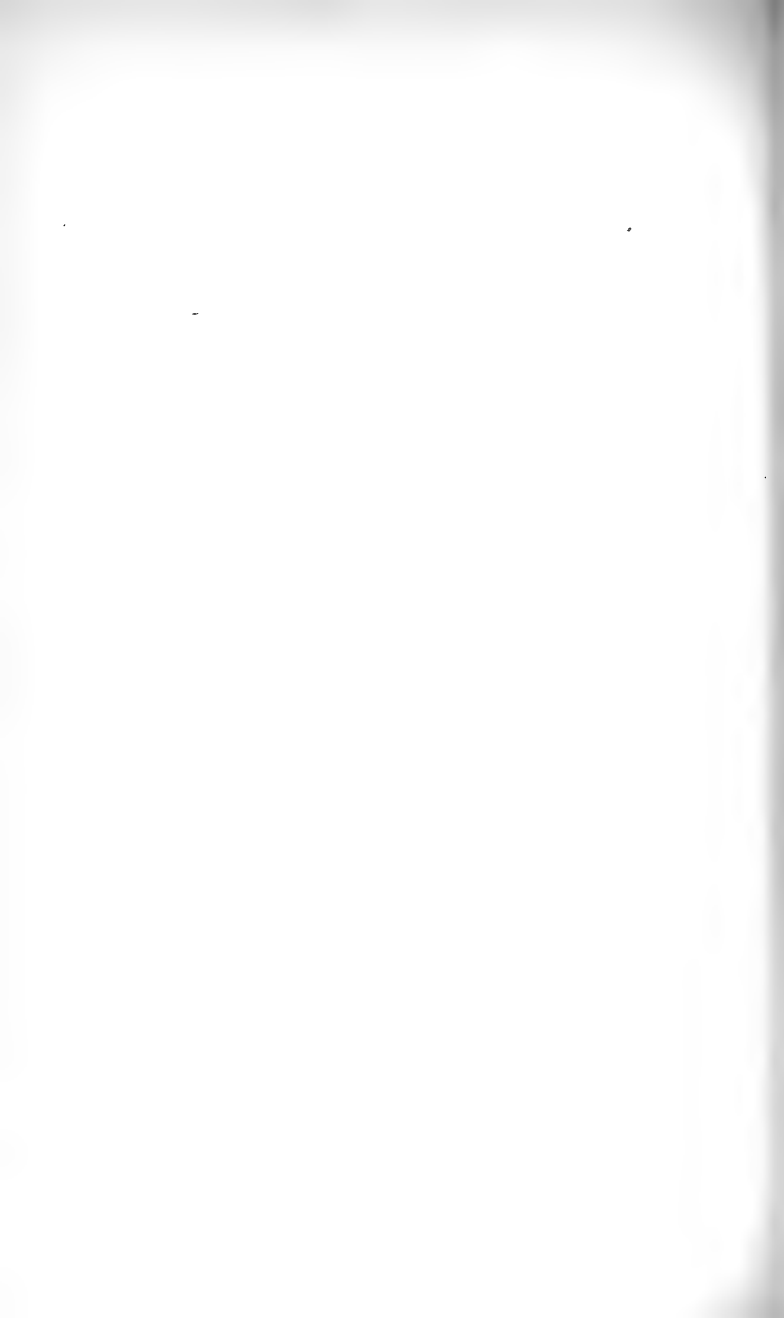
1. *Rana elegans*. 2. *Rana albilabris*.



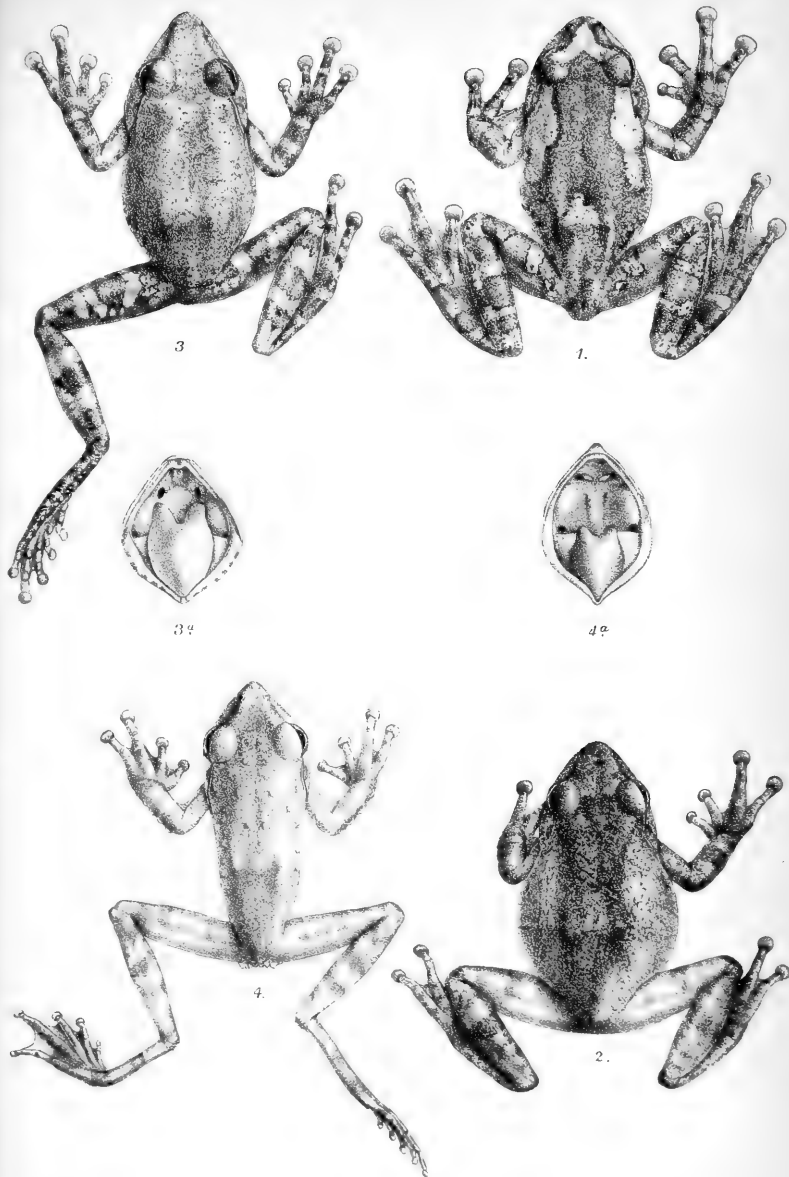












R Minter del

Minter Bros imp

1. *Rhacophorus jerdonii*. 2. *Rhacophorus dubius*.
 3. *Rhacophorus fergusonii*. 4. *Rhacophorus appendiculatus*.

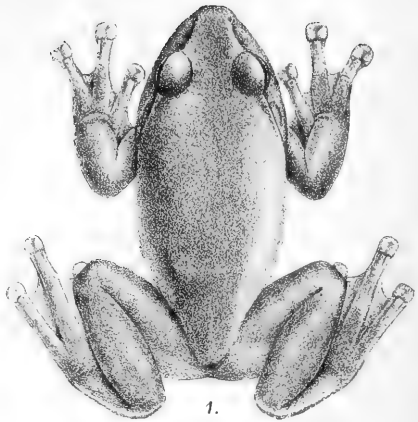




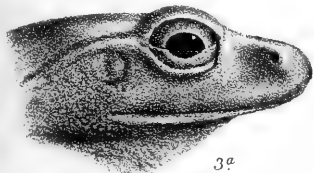




3.



1.



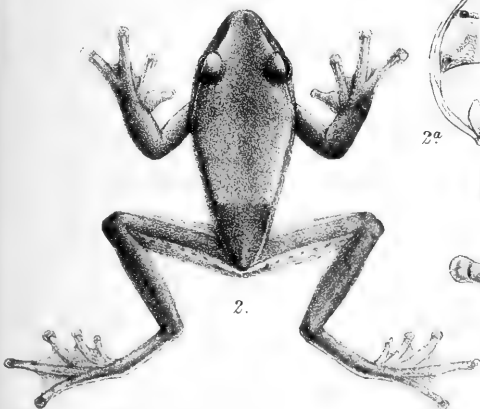
3^a



3^c



2^a



2.

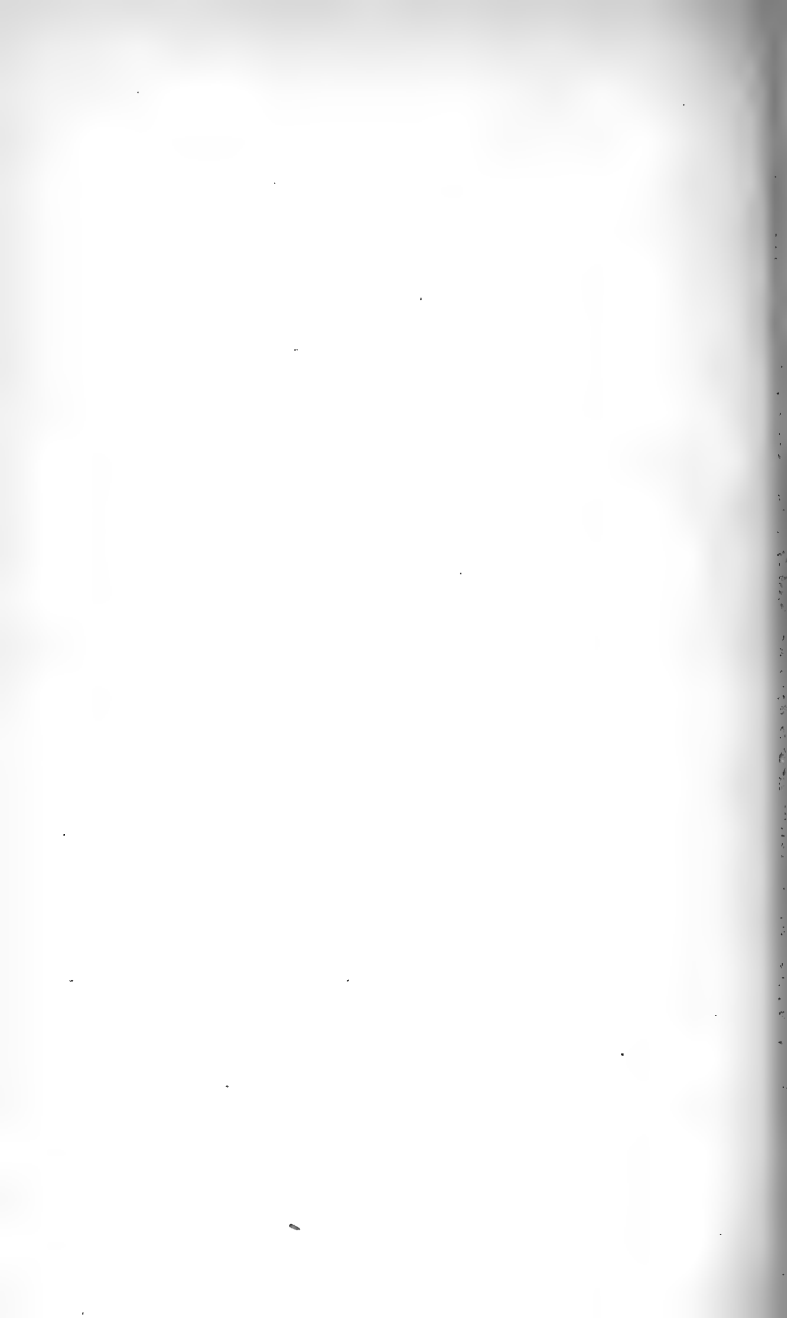


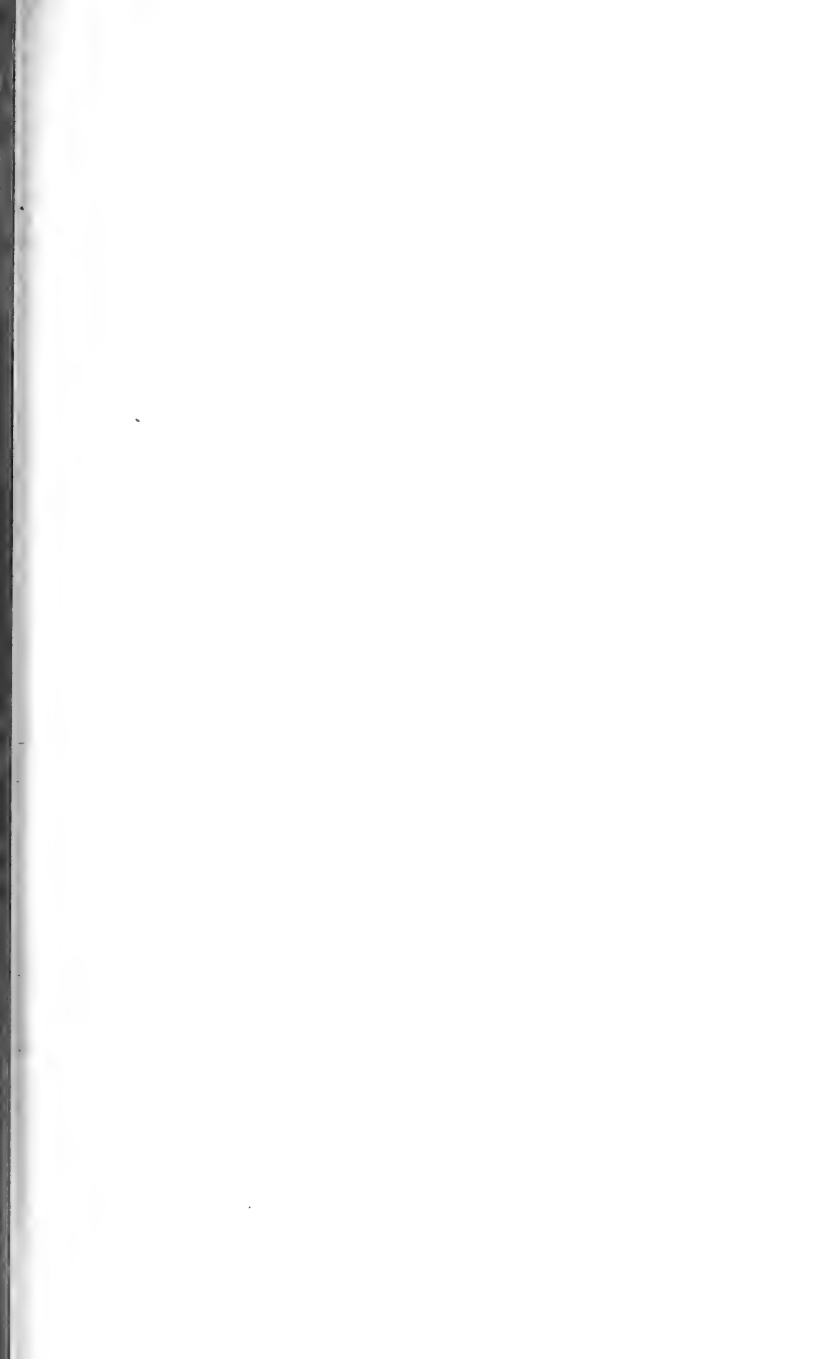
3^b

R. Mintern, del et lith.

Mintern Bros imp.

1. *Rhacophorus schlegelii*. 2. *Rhacophorus microglossus*.
3. *Rhacophorus maximus*.





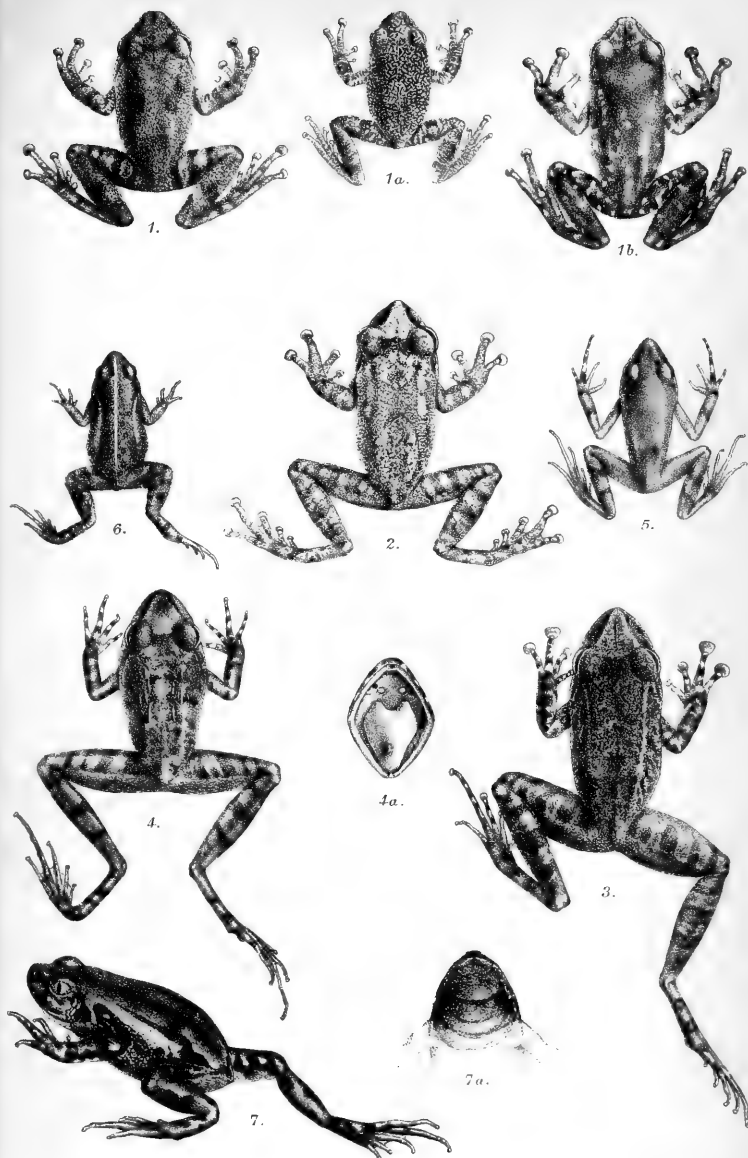




1. *Chiromantis petersii*. 2. *Chiromantis rufescens*. 3. *Ixalus fuscus*.
 4. *Ixalus hypomelas*. 5. *Ixalus oxyrrhynchus*. 6. *Ixalus nasutus*.
 7. *Ixalus beddomii*. 8. *Ixalus adspersus*.



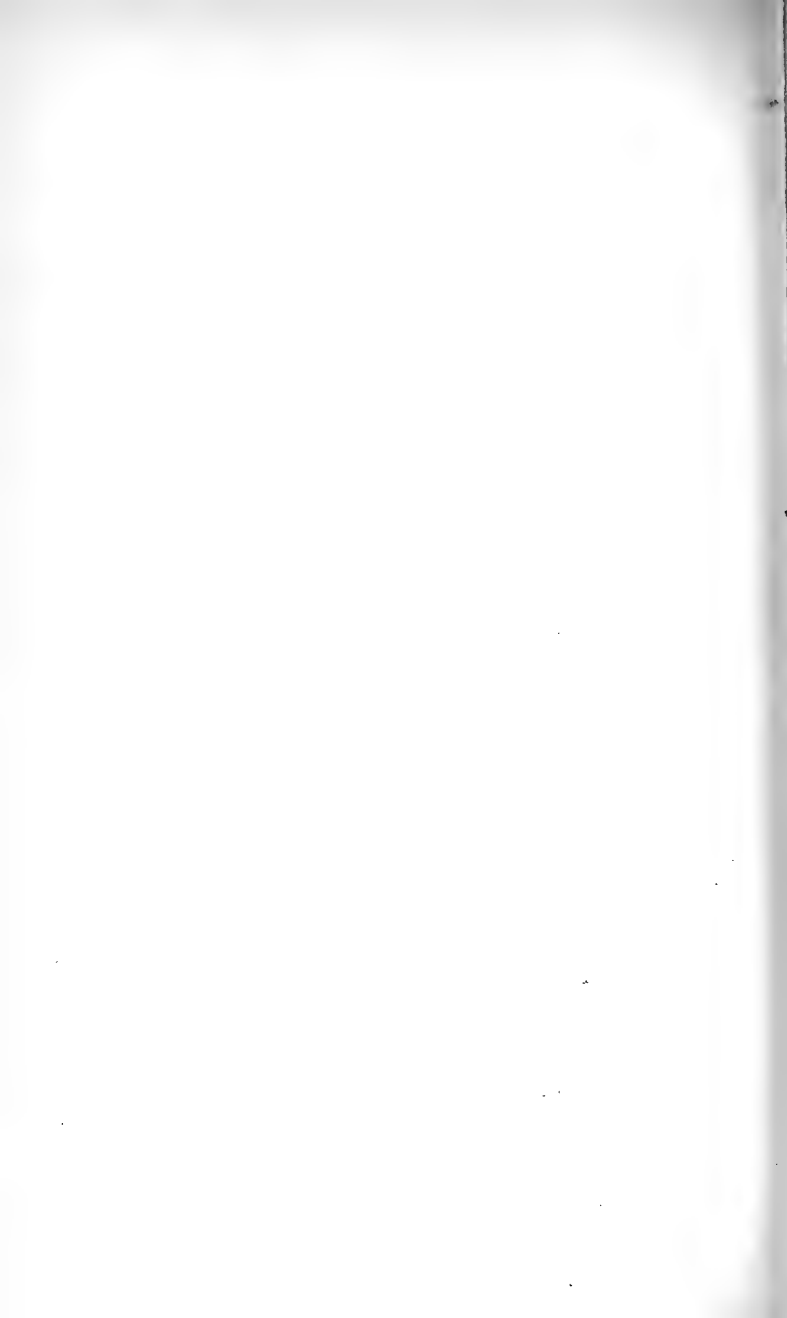




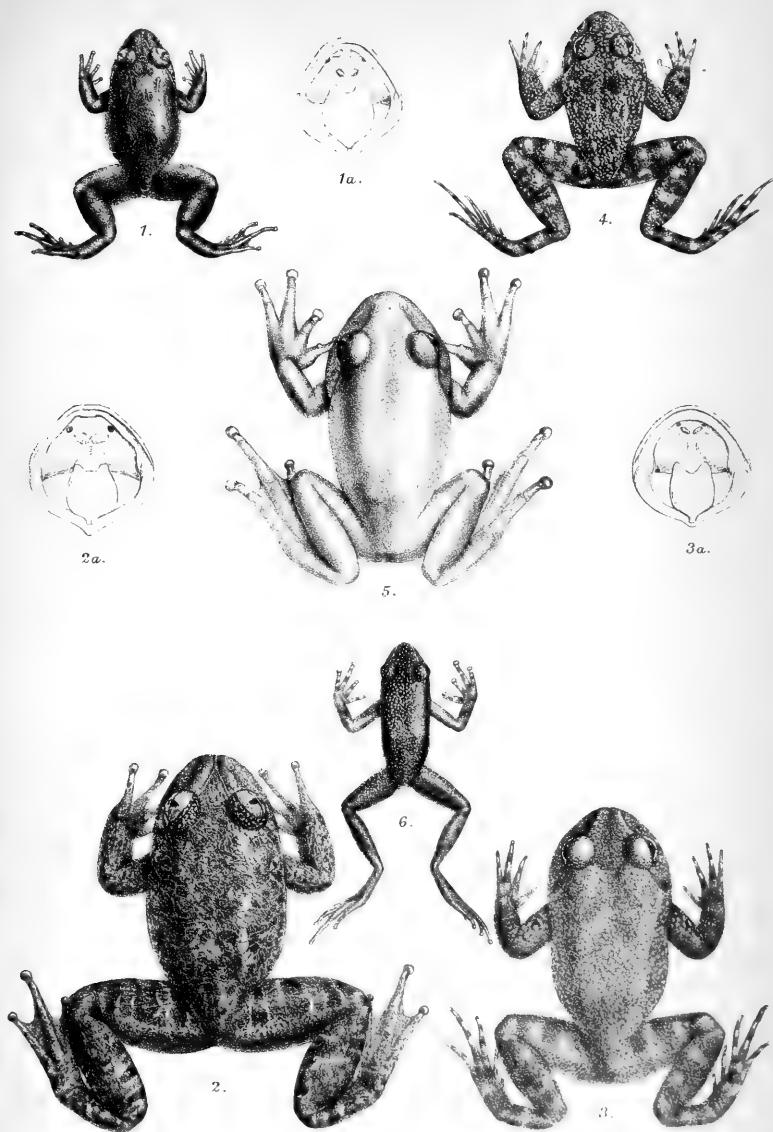
R. Minton, del. et lith.

Minton Bros imp.

1. *Ixalus flaviventris*. 2. *Ixalus signatus*. 3. *Cornufer güntheri*.
 4. *Cornufer meyeri*. 5. *Arthroleptis macrodactylus*.
 6. *Arthroleptis boettgeri*. 7. *Cassina wealii*.







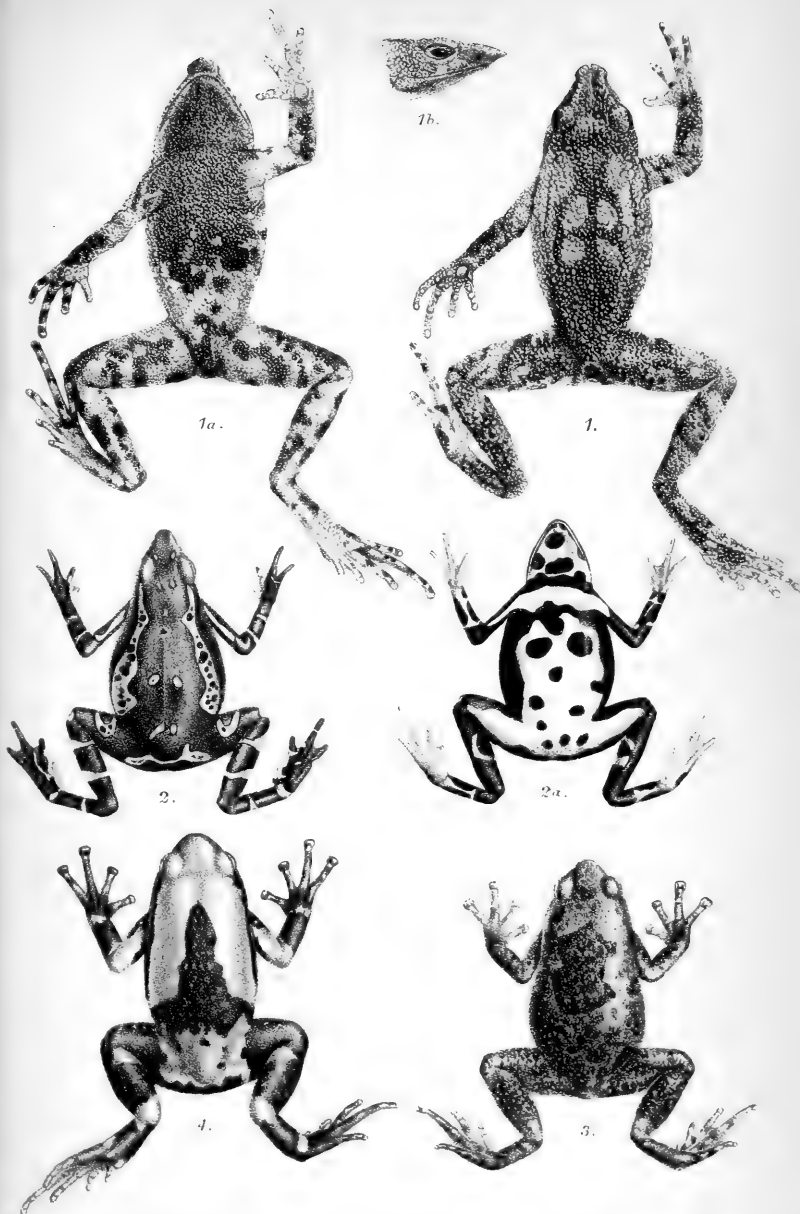
R. Minton, del. et lith.

Minton: Frogs imp.

1. *Nyctibatrachus pygmaeus*. 2. *Nyctibatrachus major*.
 3. *Nannophrys ceylonensis*. 4. *Nannophrys guntheri*.
 5. *Hylambates viridis*. 6. *Dendrobates parvulus*.





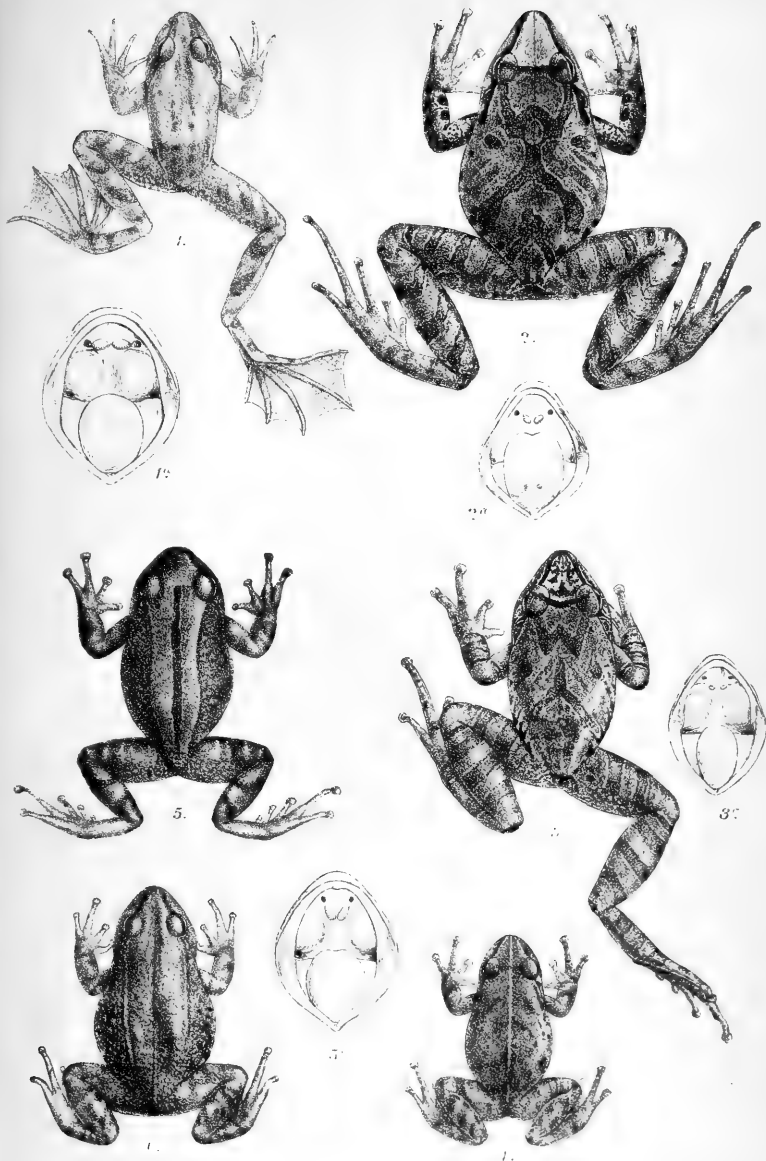


R. Minton del. et lith.

Minton Bros imp.

1. *Phrynisca proboscidea*. 2. *Phrynisca pulcher*.
 3. *Callula obscura*. 4. *Callula triangularis*.

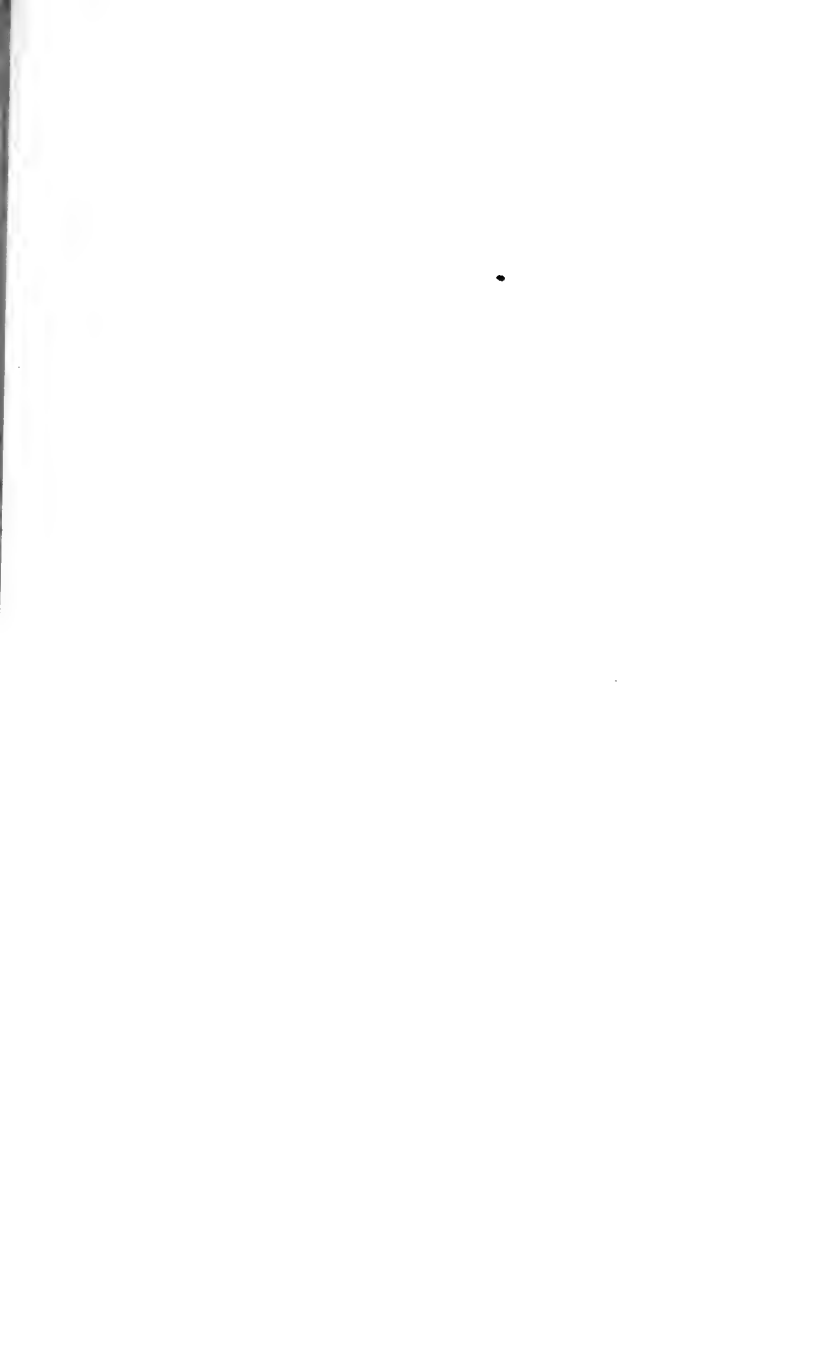




R. Minter del. et lith.

Linter. fecit imp.

1. *Pseudis minuta*. 2. *Hylodes conspicillatus*. 3. *Hylodes surdus*.
 4. *Hylodes unistrigatus*. 5. *Hylodes buckleyi*. 6. *Hylodes curtipes*.







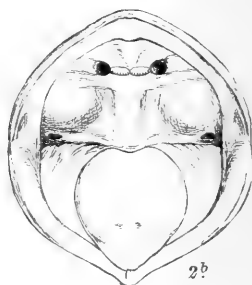
2.



2a



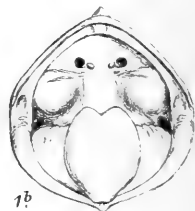
1.



2b



1a



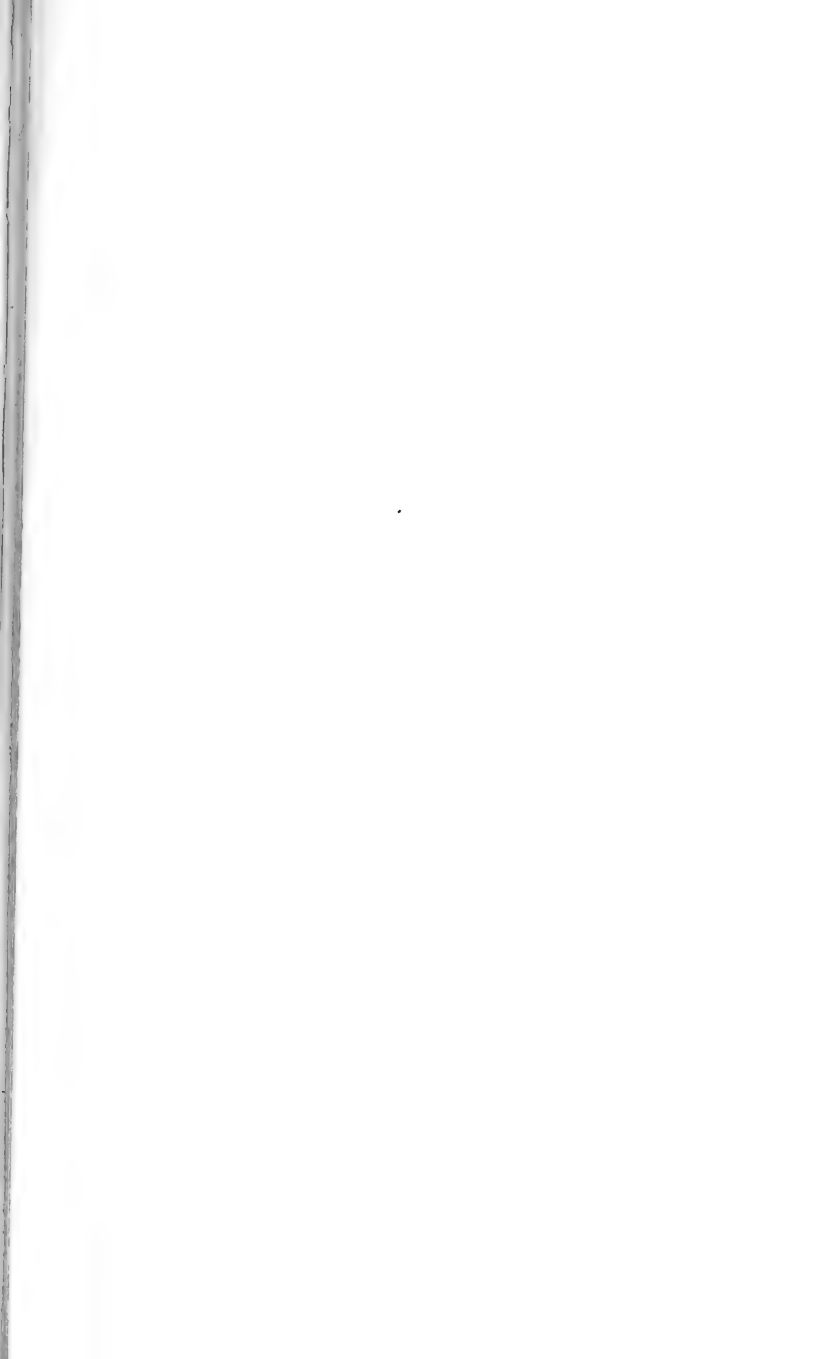
1b

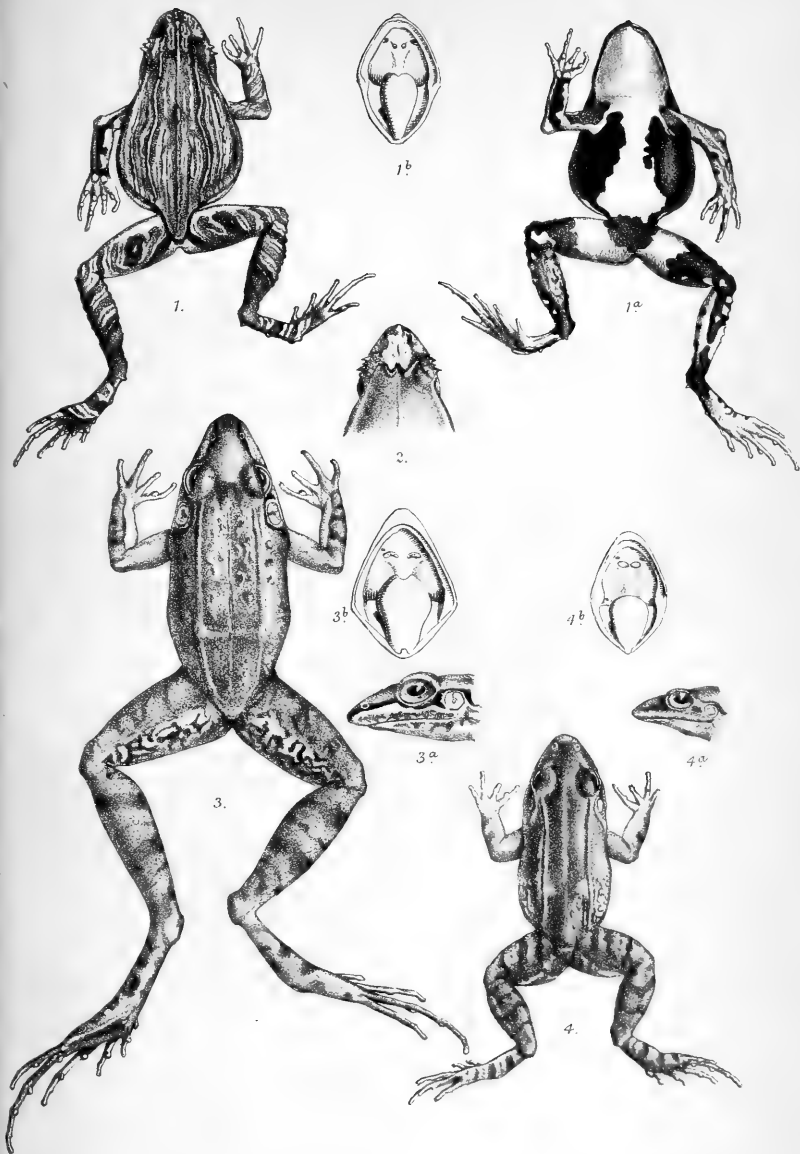
R. Minton, del et lith.

Minton Bros imp.

1. *Ceratophrys appendiculata*. 2. *Ceratophrys fryi*.







157 green
2 ship





